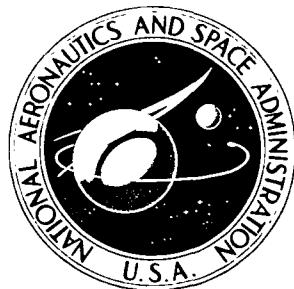


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AILERON AND KRÜGER NOSE FLAP  
EFFECTIVENESS MEASURED ON  
AN OBLIQUE WING

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## NOMENCLATURE

The axes systems and sign conventions are presented in figure 1. Lift, drag, and pitching moments are presented about the stability axes; side force, rolling moments, and yawing moments are presented about the body axes.

$b$	wing span
$C_D$	drag coefficient, $\frac{\text{drag}}{qS}$
$C_l$	rolling-moment coefficient about the body axes, $\frac{\text{rolling-moment}}{qSb}$
$C_L$	lift coefficient, $\frac{\text{lift}}{qS}$
$C_m$	pitching-moment coefficient (see fig. 2 for moment-center location), $\frac{\text{pitching moment}}{qS\bar{c}}$
$C_n$	yawing-moment coefficient about the body axes, $\frac{\text{yawing moment}}{qSb}$
$C_Y$	side-force coefficient about the body axes, $\frac{\text{side force}}{qS}$
$c$	wing chord
$c_{\text{aft}}$	portion of wing chord aft of the $0.25c$ line
$c_{\text{fwd}}$	portion of wing chord forward of the $0.25c$ line
$c_{\text{root}}$	wing root chord
$\bar{c}$	wing mean aerodynamic chord
$H$	vertical distance from wing reference plane to base line (see fig. 3(a))
$\frac{L}{D}$	lift-to-drag ratio
$M$	Mach number
$q$	free-stream dynamic pressure
$RN/L$	unit Reynolds number in millions per meter
$r$	body radius
$S$	wing area
$(\frac{t}{c})_{\max}$	maximum thickness-to-chord ratio
$V$	free-stream velocity

$x$	chordwise distance along airfoil
$x_1$	axial distance along body from the 57.45 cm longitudinal station
$Y$	distance along wing span (see fig. 3(a))
$z$	vertical distance above the airfoil chord line
$\alpha$	angle of attack, deg
$\Delta\delta_a$	aileron deflection; for example, $\Delta\delta_a = 15^\circ$ corresponds to the left aileron being deflected downward $15^\circ$ and the right aileron being deflected upward $15^\circ$
$\Lambda$	sweep angle measured between a perpendicular to the body axis and the $0.25c$ line of the wing in a horizontal plane (the right wing tip is forward for positive $\Lambda$ 's), deg

**AILERON AND KRÜGER NOSE FLAP EFFECTIVENESS**  
**MEASURED ON AN OBLIQUE WING**

Edward J. Hopkins and George H. Lovette\*

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**SUMMARY**

The effects that deflection of conventional ailerons have on the lateral/directional characteristics of an oblique wing mounted on top of a body of revolution were measured. The wing had an aspect ratio of 6 (based on the unswept wing span) and was tested at various sweep angles ranging from  $0^\circ$  to  $60^\circ$ . Krüger nose flaps mounted on drooped-nose flaps were investigated on the downstream wing panel (for sweep angles of  $45^\circ$  and  $60^\circ$ ) in an attempt to create more symmetrical spanwise wing stalling at high lift coefficients. The tests were conducted over a Mach number range of 0.25 to 1.4 and an angle-of-attack range from  $-3^\circ$  to  $28^\circ$ .

With the oblique wing in the swept position, considerable difference in the aileron effectiveness was measured for positive or negative differential aileron deflections. With the wing swept  $45^\circ$  at a Mach number of 0.8 and above, an extension of the span of the Krüger nose flaps on the downstream wing panel did not improve the linearity of the pitching-, rolling-, and yawing-moment curves.

**INTRODUCTION**

It was shown in reference 1 that a wing-body combination employing a low aspect-ratio oblique wing (suitable for highly maneuverable vehicles) had greater aerodynamic efficiency than a conventional, fixed-sweep wing design over a Mach number range of 0.6 to 1.4. At a Mach number of 0.95, the maximum lift-to-drag ratio measured for the oblique-wing design was about twice that of the fixed-sweep design, both having  $45^\circ$  of sweep. At high lift coefficients, planar oblique wings suffer from an asymmetrical spanwise distribution of section lift coefficients and related asymmetrical stalling; this leads to nonlinear pitching-, rolling-, and yawing-moment curves.

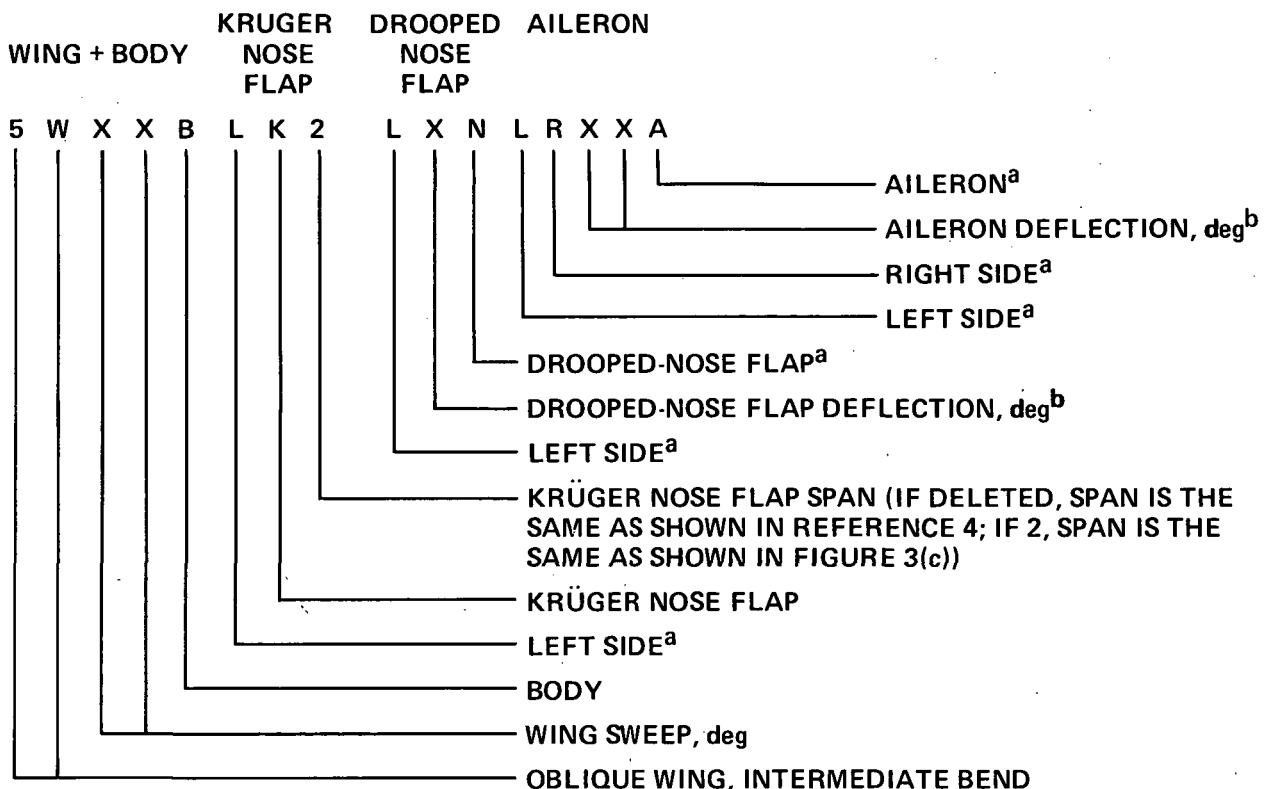
Several possible means for overcoming this asymmetry of wing stalling have been investigated; namely, upward wing bending in references 2 and 3, Krüger nose flaps in reference 4, and drooped-nose flaps in reference 5. Krüger-nose flaps, mounted on drooped-nose flaps (deflected  $5^\circ$ ) on the downstream wing panel, proved to be the only method investigated that considerably improved the linearity of the moment curves. In reference 4, the Krüger flaps covered only a portion of the downstream wing span of the oblique wing; therefore, in the present investigation the effect, on the spanwise stall progression, of having the Krüger nose flaps extend up to the wing-body juncture was explored.

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The present investigation was undertaken mainly to measure the effectiveness of conventional ailerons on an oblique wing at various angles of sweep over a Mach number range of 0.25 to 1.4. The same intermediate bend, oblique wing that was used in reference 2 was selected for this study. It was necessary to test these ailerons with both positive and negative differential deflections because of the asymmetry of spanwise wing loading and stalling.

### CONFIGURATION CODE



<sup>a</sup>When symbol is deleted, Krüger flaps are removed or ailerons and drooped-nose flaps are undeflected.

<sup>b</sup>When number is deleted, ailerons or drooped-nose flaps are undeflected. A positive number corresponds to the amount in degrees that the left aileron is deflected downward and the right aileron is deflected upward.

## TEST FACILITY

The Ames 6- by 6-Foot Wind Tunnel is a variable pressure, continuous flow, closed return-type facility. The nozzle ahead of the test section consists of an asymmetric sliding block which permits a continuous variation of Mach number from 0.25 to 2.3. The test section has a perforated floor and ceiling for boundary-layer removal to permit transonic testing.

## MODEL DESCRIPTION

The model consisted of an oblique wing mounted on top of a Sears-Haack body of revolution designed to have minimum wave drag for a given length and volume. With different fairing blocks installed under the wing (fig. 2) the wing could be swept  $0^\circ$ ,  $45^\circ$ ,  $50^\circ$ ,  $55^\circ$ , and  $60^\circ$ . Details of the body and of the fairing blocks are given in table 3 of reference 3. Note in figure 2 that the wing pivot point and the moment center are located at  $0.40c_{\text{root}}$  ( $\Lambda = 0^\circ$ ). The wing planform consisted of two semiellipses having the same major axis but different minor axes in the ratio of 3:1 so that the major axis is the quarter chord line. The aspect ratio of the wing ( $\Lambda = 0^\circ$ ) was 6.0. The wing panels were bent upward to form the so-called intermediate bend shown in figure 3(a). With the chord lines that are perpendicular to the quarter chord line remaining in horizontal planes, this type of bending is equivalent to wing twist when the wing is swept — that is, washout on the downstream panel and washin on the upstream panel. Additional geometric wing and body details are presented in table 1.

A subcritical Garabedian airfoil section with a maximum  $t/c = 0.1016$  (designed for a lift coefficient of 1.3 at a Mach number of 0.6) was used perpendicular to the quarter chord line. This profile, shown in figure 3(b), was adjusted in maximum thickness from  $0.11c$  at the wing root to  $0.06c$  at the wing tip, according to the elliptical equation given in figure 3(a). Coordinates for the Garabedian profile are given in table 2.

The model was equipped with  $0.25c$  ailerons that covered 45 percent of the wing semispan as shown in figure 3(c). For each aileron deflection, the gaps near the aileron nose were sealed and faired in smoothly with the wing contour.

The Krüger nose flaps were similar to those used on the same wing in reference 4; however, with the wing swept  $45^\circ$ , the flap span was increased up to the wing-body juncture. With the wing swept  $60^\circ$ , the Krüger nose flap span was the same as that for the wing swept  $45^\circ$ ; therefore, a slight gap existed between the end of the flap and the body for this case. All gaps between Krüger nose flap segments shown in figure 3(c) were sealed. These flaps were only used on the downstream wing panel and were mounted on the nose flaps that were drooped  $5^\circ$ . The upper surface of the Krüger-nose flaps was faired into the nose flaps with putty.

## DATA REDUCTION AND TEST PROCEDURE

The model was sting-supported through the base of the model on a 6-component electrical strain-gage balance as shown in figure 4. Measured drag forces were corrected to a condition corresponding to having the free-stream static pressure on the base of the fuselage. Moment data are presented about a center located on the body axis at  $0.4c_{\text{root}}$  ( $\Lambda = 0^\circ$ ) (see fig. 2). Reference lengths and the wing area used in the reduction of the data are given in table 1.

Boundary-layer transition strips (0.1905 cm wide), consisting of a random distribution of glass spheres 0.01905 cm in diameter, were placed on the upper and lower surface of the wing 0.762 cm downstream of the wing and Krüger nose flap leading edges, and on the body 2.54 cm behind its tip. Sublimation studies made at wing sweep angles of  $0^\circ$  and  $45^\circ$  (flaps retracted) indicated that the boundary layer was tripped by the glass spheres near the roughness strips at  $\alpha = 0^\circ$  and  $10^\circ$  at Mach numbers of 0.6 and 0.9. Estimates of the required size of roughness to trip the boundary layer at other sweep angles and higher Mach numbers indicate that the chosen size should be adequate.

For most of the data, the unit Reynolds number was held constant at  $8.2 \times 10^6/\text{m}$ ; however, at a Mach number of 0.25 the unit Reynolds number was sometimes reduced to  $5.7 \times 10^6/\text{m}$ , because of the dynamic overload restrictions of the balance. The model was mounted on a sting that was bent  $10^\circ$  to increase the maximum angle of attack; the resulting angle-of-attack range was from  $-3^\circ$  to  $28^\circ$ . Angle of attack was indicated by an electrical dangleometer mounted in the support located downstream of the sting. Corrections were applied to the indicated angle of attack for balance and sting deflections.

For the aileron effectiveness measurements, the wing sweep was held successively at  $0^\circ$ ,  $45^\circ$ ,  $50^\circ$ ,  $55^\circ$ , and  $60^\circ$ . With the wing in a swept position, the right and left ailerons were differentially deflected both plus and minus  $5^\circ$ ,  $10^\circ$ , and  $15^\circ$ , because of the asymmetric spanwise loading associated with oblique wings.<sup>1</sup> For the Krüger nose flap measurements, the wing was swept either  $45^\circ$  or  $60^\circ$ .

## RESULTS AND DISCUSSION

An indication of the effectiveness of the Krüger nose flaps in controlling the flow separation on the downstream wing panel of the oblique wing with intermediate bend, mounted with a sweep angle of  $45^\circ$ , is presented in figures 5 through 11. Similar results for the oblique wing mounted with a sweep angle of  $60^\circ$  are presented in figures 12 through 18. To assist in evaluating the Krüger nose flap results given in figures 5 through 18 for Mach numbers of 0.6 and above, results are also presented for the plain oblique wing. In figures 5 through 10, results from reference 4 for the oblique wing ( $\Lambda = 45^\circ$ ) equipped with the shortened Krüger nose flap, are also presented for comparison purposes. Similar data for the oblique wing swept  $60^\circ$  and with the shortened Krüger nose flap were not obtained. The aileron effectiveness on the oblique wing is presented in figures 19 through 22 for  $\Lambda = 0^\circ$ ; in figures 23 through 29 for  $\Lambda = 45^\circ$ ; in figures 30 through 36 for  $\Lambda = 50^\circ$ ;

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<sup>1</sup>A positive aileron designation ( $\Delta\delta_a$ ) on the figures corresponds to the extent, in degrees, that the left aileron is deflected downward and the right aileron deflected upward.

in figures 37 through 43 for  $\Lambda = 55^\circ$ ; and in figures 44 through 50 for  $\Lambda = 60^\circ$ . In figures 19 through 50, the effects of aileron deflection on the static longitudinal stability characteristics are presented for a differential aileron deflection of  $\pm 15^\circ$  only; the effectiveness of the aileron for producing rolling moments, yawing moments, and side force is presented for differential aileron deflections of  $\pm 5^\circ$ ,  $\pm 10^\circ$ , and  $\pm 15^\circ$ .

### Krüger Nose Flaps

At Mach numbers of 0.25, 0.40, and 0.60, with a wing sweep of  $45^\circ$ , an extension of the span of the Krüger nose flap (mounted on only the downstream wing panel) up to the fuselage had the favorable effect of changing the "pitch-up" to a "pitch-down" tendency at  $C_L$ 's between about 0.9 and 1.2. This extension also made the rolling-moment curves more linear, but had no beneficial effect on the yawing-moment curves (see figs. 5 through 7). At Mach numbers of 0.80 and above and a wing sweep of  $45^\circ$ , an extention of the span of the Krüger nose flaps did not improve the linearity of the pitching-, rolling-, and yawing-moment curves (see figs. 8 through 11).

At subsonic Mach numbers between 0.6 and 0.9, and for a wing sweep of  $60^\circ$ , the Krüger nose flaps (mounted on only the downstream wing panel) reduced the "pitch-up" tendency of the plain wing between lift coefficients of 0.7 and 1.0, and produced slightly more linear  $C_Y$ ,  $C_n$ , and  $C_l$  curves (see figs. 14 through 16). At Mach numbers of 0.95 and 1.4 (figs. 17 and 18), there was little or no improvement in the linearity of either the  $C_m$  or  $C_l$  curves.

### Aileron Effectiveness

For subsonic Mach numbers and all angles of wing sweep, somewhat larger rolling moments were produced by deflecting the aileron on the trailing wing panel upward and deflecting the aileron on the leading wing panel downward (negative  $\Delta\delta_a$ ) than resulted from deflecting these ailerons in the opposite direction (e.g., see figs. 23(e) and 23(f) through figs. 26(e) and 26(f)). At low lift coefficients, it can be observed that more than  $15^\circ$  of aileron deflection on each wing panel is required to trim the rolling moment related to having the wing panels bent upward to the intermediate bend position. Since it was pointed out in reference 2 that bending the wing upward, to the form of the wing with intermediate bend, did not improve the asymmetrical spanwise wing stall; it only produced rolling moments to be trimmed at low lift coefficients. A better wing design might not have any upward bend and thus no associated rolling moments. At high lift coefficients, considerably more than  $15^\circ$  of aileron deflection on each panel would be required to trim the rolling moments resulting from the asymmetry of wing stalling. As shown in figures 23(c) through 50(c), the deflection of ailerons on swept oblique wings produces large pitching moments which would at least partly have to be trimmed by an auxiliary horizontal surface. However, for an oblique-winged airplane designed with positive static longitudinal stability and no builtin wing bend, the pitching moment produced by aileron deflection could be nearly "self trimming." At supersonic Mach numbers, slightly greater rolling moments were produced by deflecting the aileron on the trailing wing panel downward and deflecting the aileron on the leading wing panel upward (positive  $\Delta\delta_a$ ), than by deflecting these ailerons in the opposite direction; for example, see figures 27(e) and 27(f) or 28(e) and 28(f).

## CONCLUDING REMARKS

With the oblique wing in the swept position, considerable difference in the aileron effectiveness was measured for positive or negative differential aileron deflection. More than 15° of aileron deflection on each wing panel was required to trim the rolling moments produced at low lift coefficient when the wing panels were bent upward (in an attempt to alleviate the asymmetric spanwise wing stalling) and to trim the rolling moments at high lift coefficients due to wing stalling.

With the wing swept 45° at a Mach number of 0.8 and above, an extension of the span of the Krüger nose flaps on the downstream wing panel did not improve the linearity of the pitching-, rolling-, and yawing-moment curves. With the wing swept 60° at Mach numbers of 0.60 and 0.80, the Krüger nose flaps (mounted on only the downstream wing panel) reduced the pitch-up tendency of the plain wing and produced slightly more linear rolling- and yawing-moment curves, but had no beneficial effects at the higher Mach numbers.

Ames Research Center  
National Aeronautics and Space Administration  
Moffett Field, Calif. 94035, June 3, 1976

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4. Hopkins, Edward J.; and Lovette, George H.: Effect of Krüger Nose Flaps on the Experimental Force and Moment Characteristics of an Oblique Wing. *NASA TM X-3372*, 1976.
5. Hopkins, Edward J.; and Lovette, George H.: Effect of Drooped-Nose Flaps on the Experimental Force and Moment Characteristics of an Oblique Wing. *NASA TM X-3398*, 1976.

TABLE 1.- MODEL GEOMETRY

Body	
Radius	$r = 3.856[1 - (1 - 2x_1/114.91)^2]^{3/4}$ cm
Length	
Closed	114.91 cm
Cutoff	91.44 cm
Maximum diameter	7.71 cm
Wing	
Planform ellipticity about 0.25 c line	4.7:1
Span	90.51 cm
Span (reference)	71.12 cm
Area (reference)	1365.09 cm <sup>2</sup>
Mean aerodynamic chord (reference), $\bar{c}$	20.88 cm
Root chord	19.20 cm
Aspect ratio ( $\Lambda = 0$ )	6.0
Aspect ratio ( $\Lambda = 45^\circ$ )	3.2
Incidence relative to body centerline	0
Profile perpendicular to 0.25 c line	Garabedian, subcritical (see table 2)

TABLE 2.- COORDINATES FOR GARABEDIAN PROFILE  
 $[(t/c)_{max} = 0.1016, \text{design lift coefficient} = 1.3 \text{ at } M = 0.6]$

$x/c$	$z/c$	$x/c$	$z/c$
0	0	0	0
-.00045	.00079	.00048	-.00058
-.00073	.00146	.00104	-.00120
-.00086	.00191	.00165	-.00176
-.00097	.00244	.00257	-.00249
-.00103	.00290	.00343	-.00308
-.00106	.00345	.00467	-.00382
-.00104	.00403	.00592	-.00445
-.00098	.00463	.00674	-.00481
-.00077	.00572	.00774	-.00519
-.00052	.00653	.00943	-.00570
-.00021	.00732	.01149	-.00620
.00026	.00830	.01539	-.00694
.00073	.00909	.02583	-.00837
.00163	.01033	.03967	-.00970
.00276	.01161	.06022	-.01116
.00464	.01340	.09339	-.01288
.00709	.01538	.13965	-.01462
.01197	.01878	.19880	-.01601
.02179	.02443	.25034	-.01684
.03187	.02928	.31761	-.01738
.04250	.03373	.38597	-.01735
.06373	.04113	.45495	-.01657
.09353	.04969	.50010	-.01568
.13389	.05882	.54359	-.01456
.17545	.06597	.57465	-.01363
.22415	.07249	.61351	-.01232
.28227	.07822	.65330	-.01090
.34741	.08236	.68122	-.00988
.41444	.08434	.71655	-.00865
.48168	.08406	.74682	-.00771
.55738	.08094	.77611	-.00702
.62052	.07591	.82243	-.00642
.68276	.06852	.87054	-.00698
.72012	.06288	.89717	-.00810
.75413	.05684	.91595	-.00941
.82318	.04227	.94348	-.01235
.85663	.03370	.96854	-.01674
.89115	.02388	.98615	-.02126
.92448	.01327	.99596	-.02434
.95410	.00145	1.00000	-.02600
.97175	-.00538		
.99163	-.01450		
1.00000	-.01900		

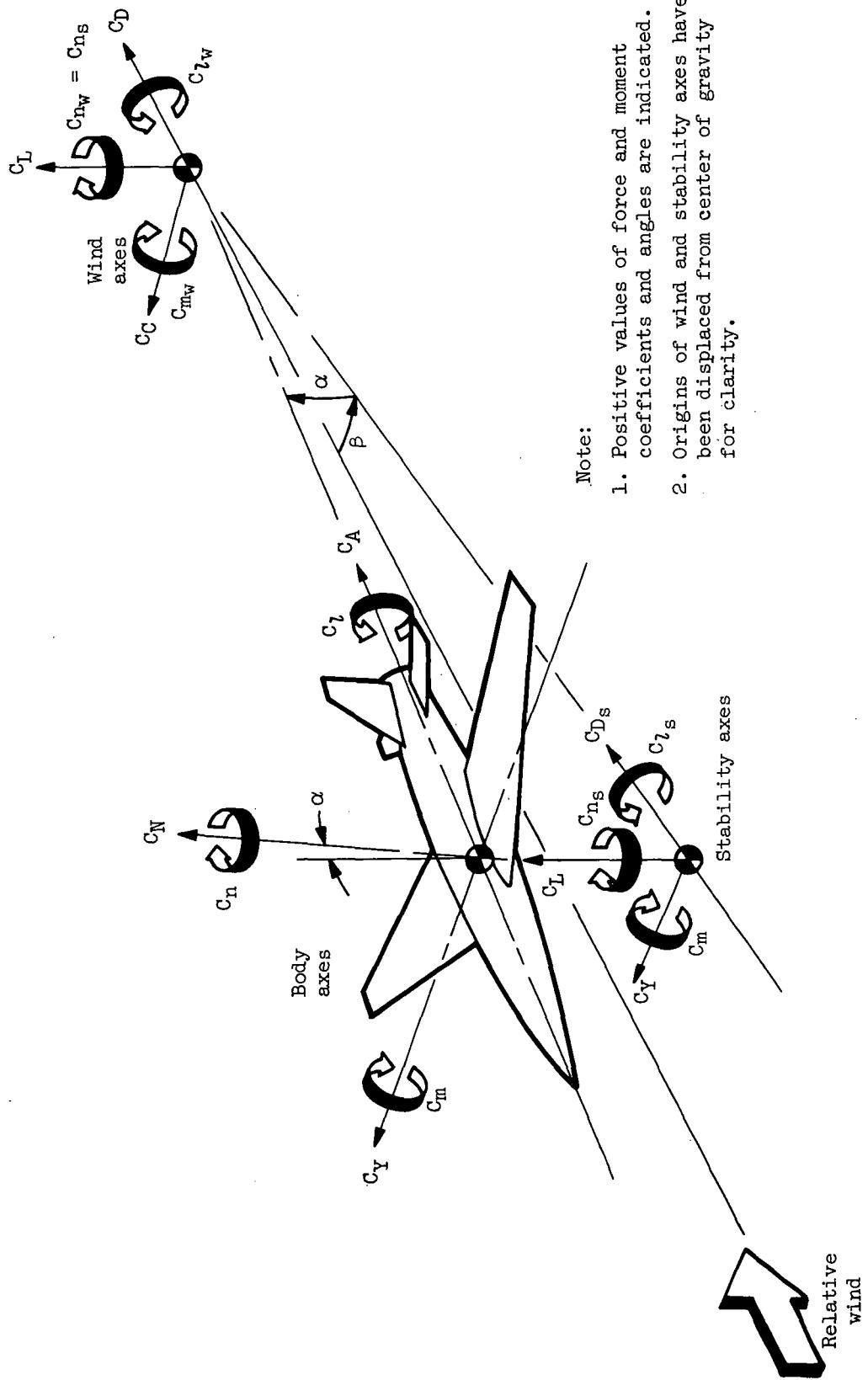


Figure 1.— Axes systems.

Note: All dimensions are in centimeters except as noted

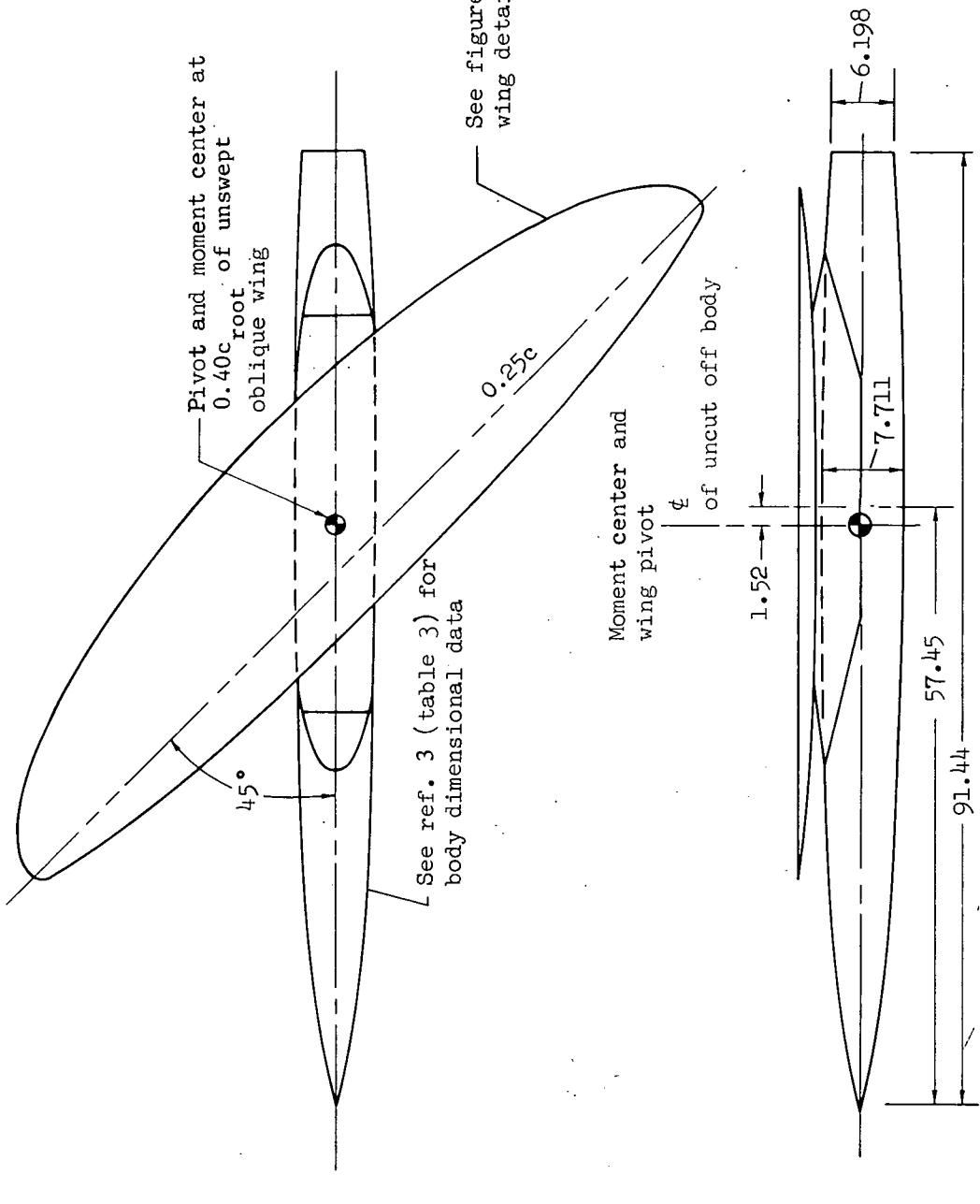
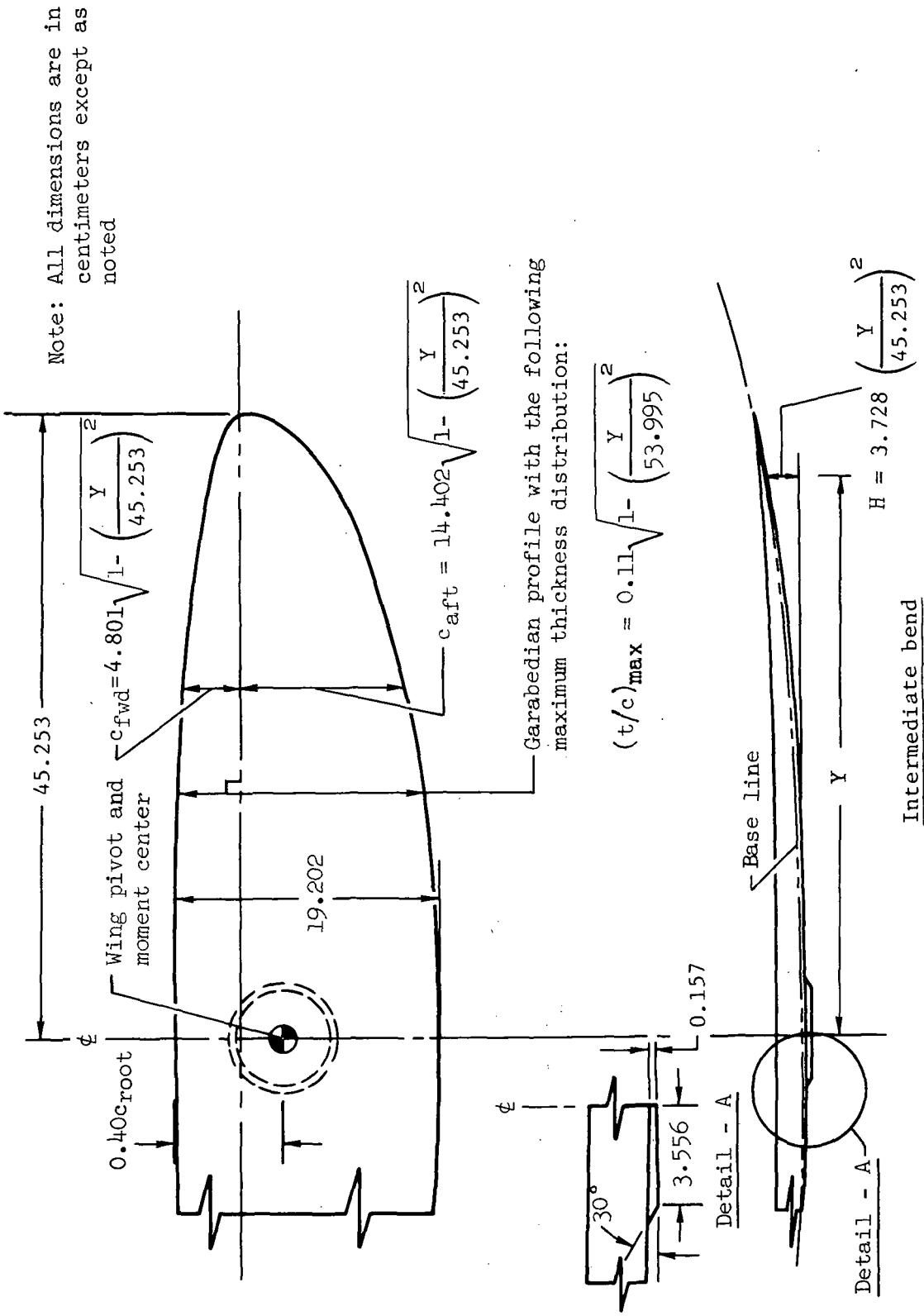
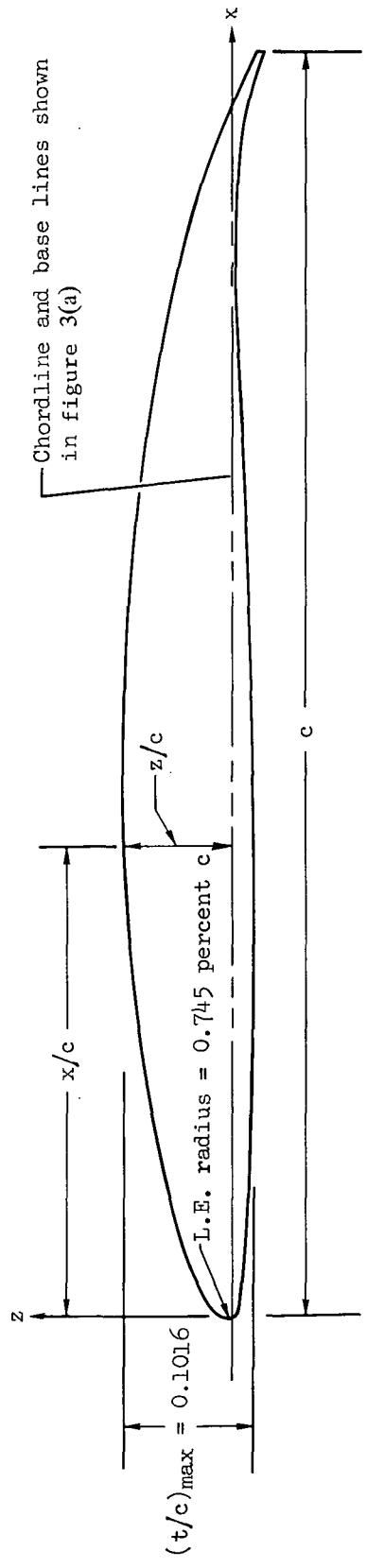


Figure 2.— Pivot and moment-center locations for the oblique wing mounted on top of the body of revolution.



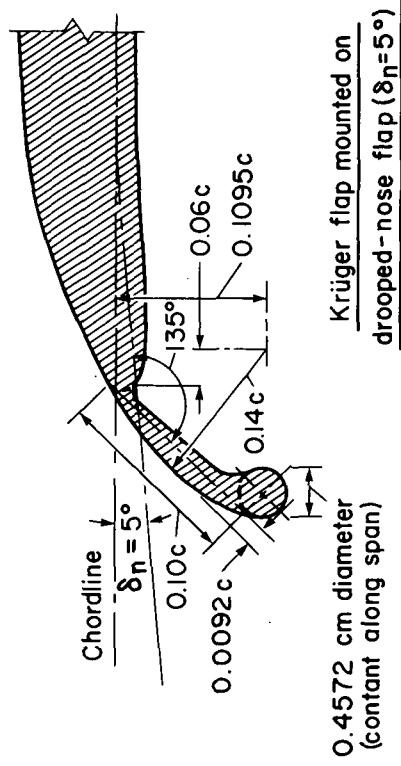
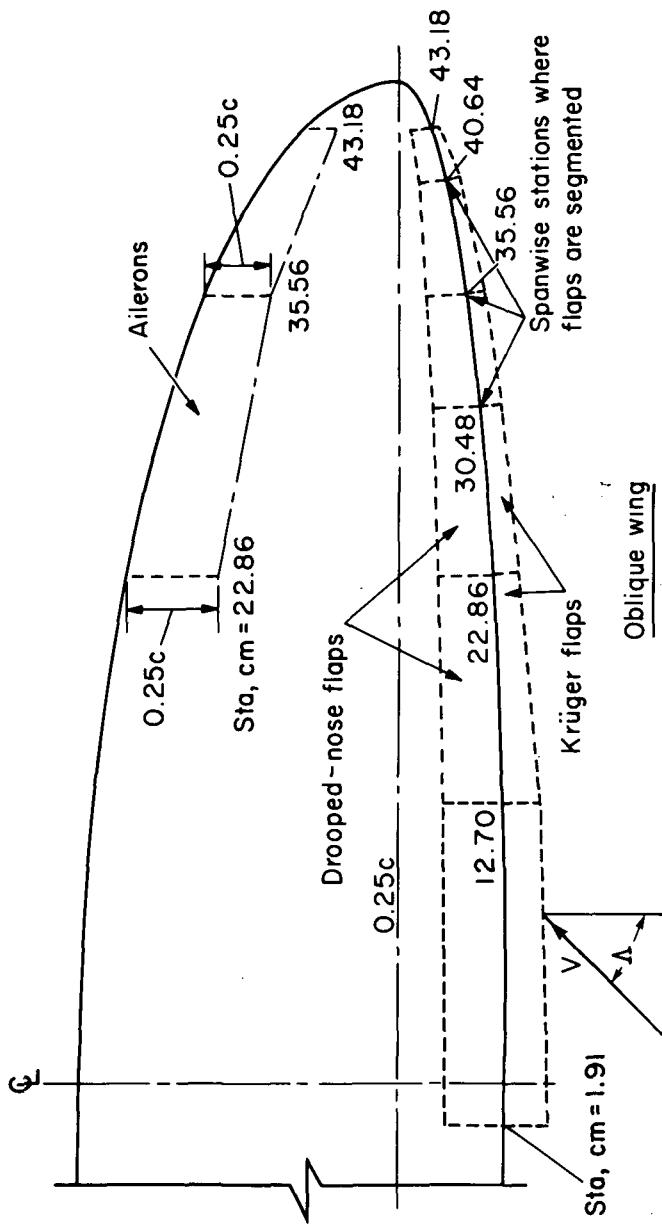
(a) Planform and bend lines.

Figure 3.— Geometry of the oblique wings.



(b) Garabedian profile.

Figure 3.—Continued.



(c) Ailerons and Krüger flaps.

Figure 3.—Concluded.

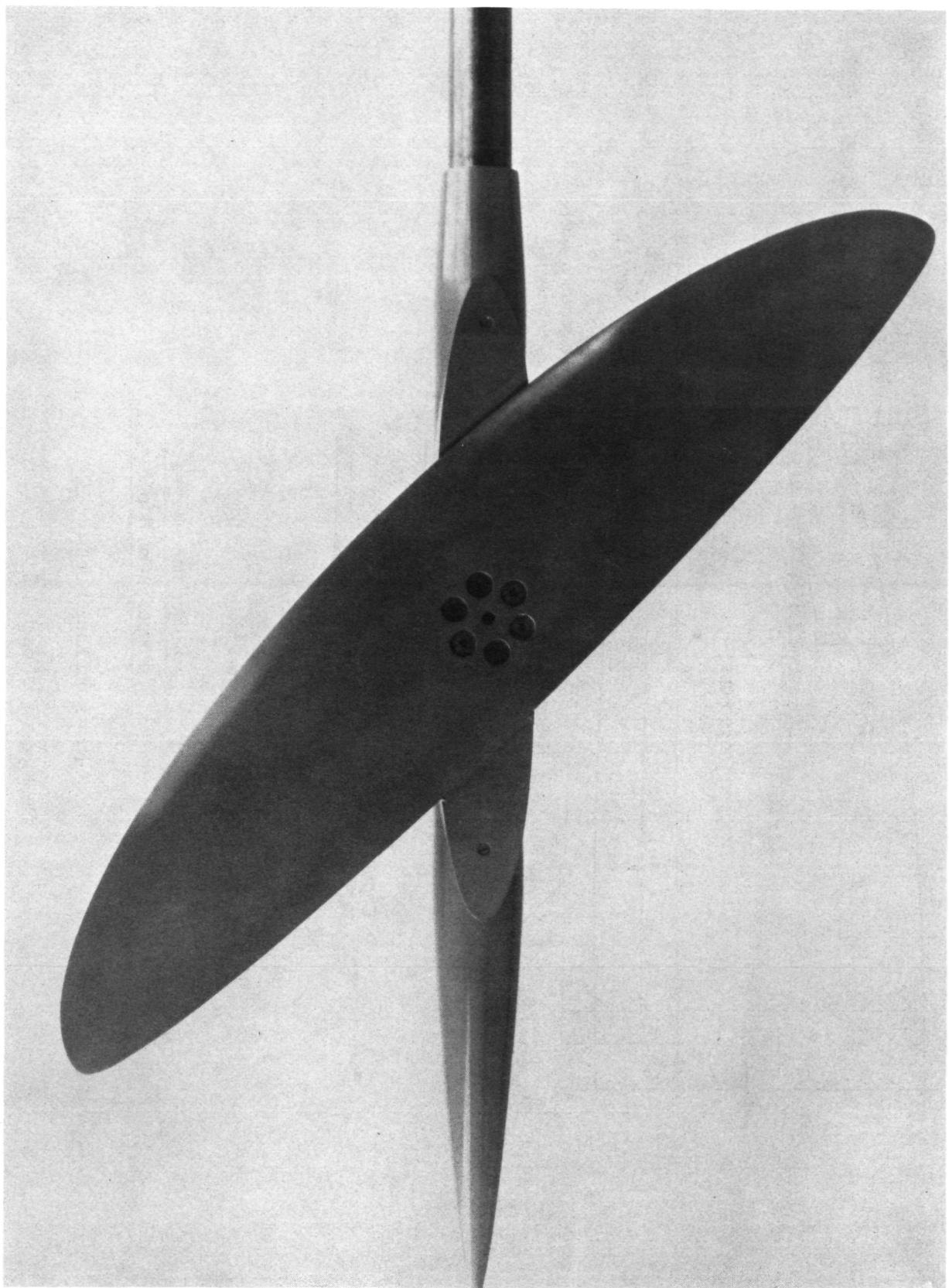


Figure 4.— Photograph of the oblique wing ( $\Lambda = 45^\circ$ ) mounted on top of the body of revolution.

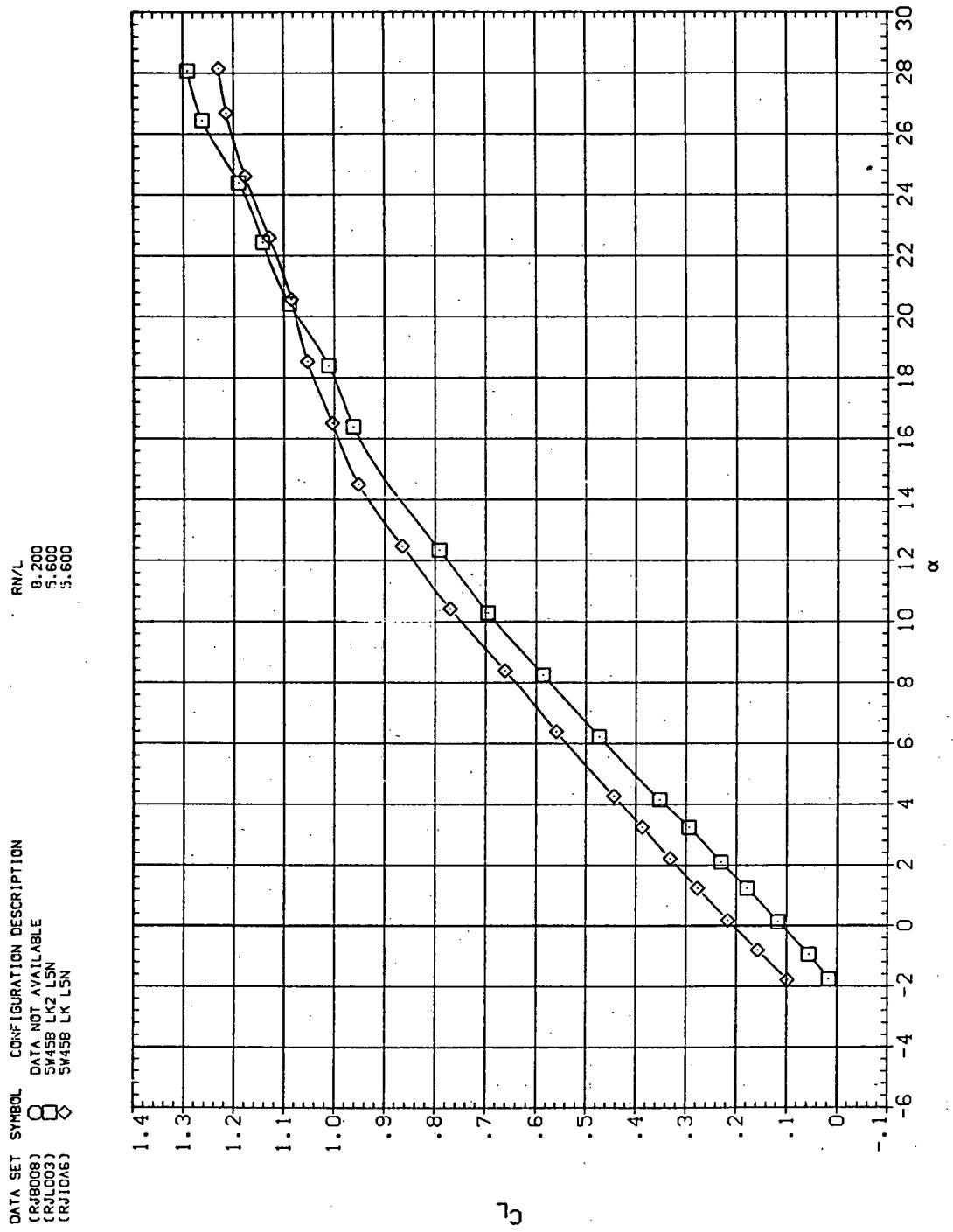


Figure 5.— Effect of Krüger flaps mounted on the drooped-nose flap deflected 5°, downstream panel only:  $\Lambda = 45^\circ$ ,  $M = 0.25$ .

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
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[CRJL003]	SW4SB LK2 LSN
[RJ1046]	SW4SB LK LSN

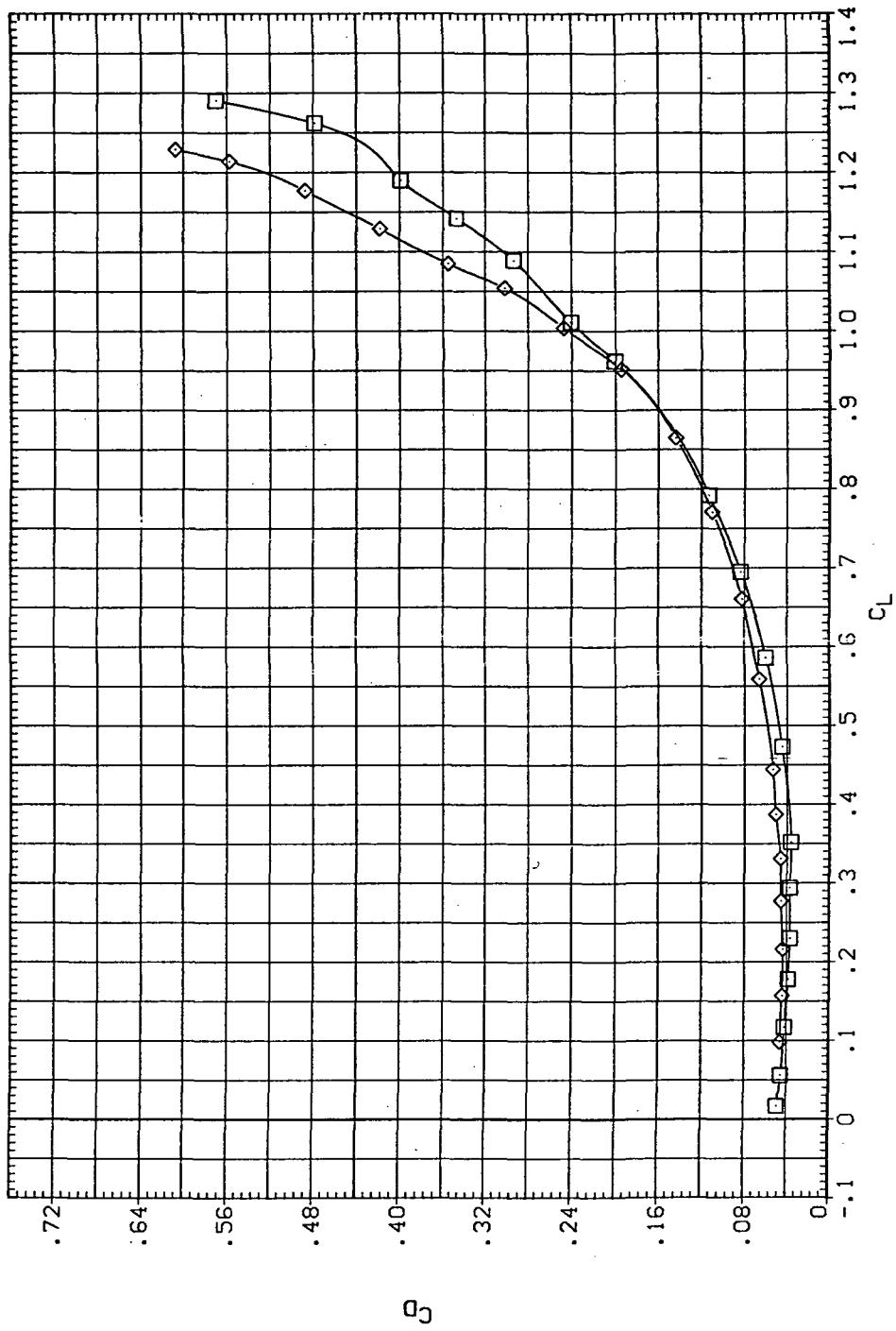
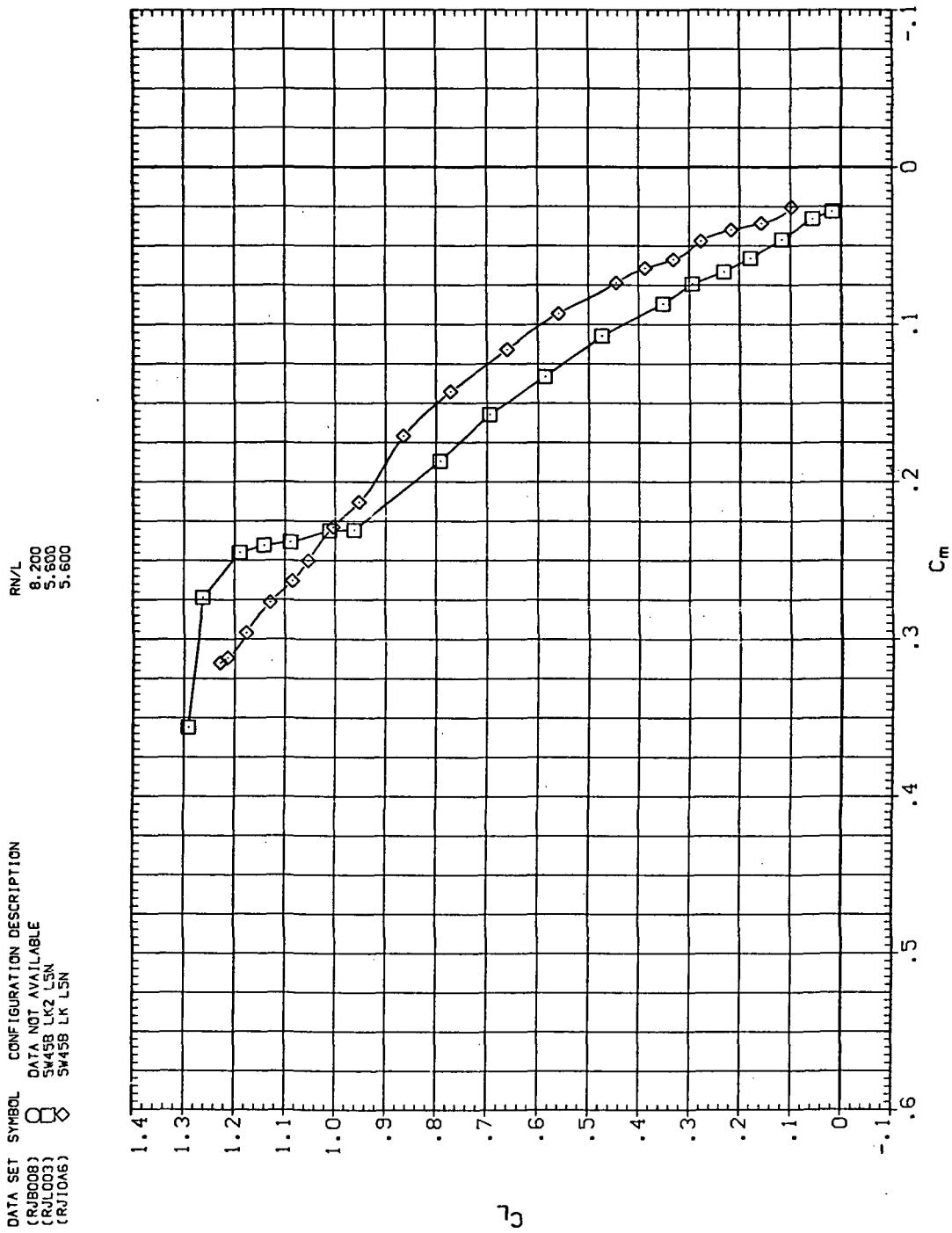
(b)  $C_D$  vs  $C_L$ 

Figure 5.—Continued.



(c)  $C_L$  vs  $C_m$

Figure 5.—Continued.

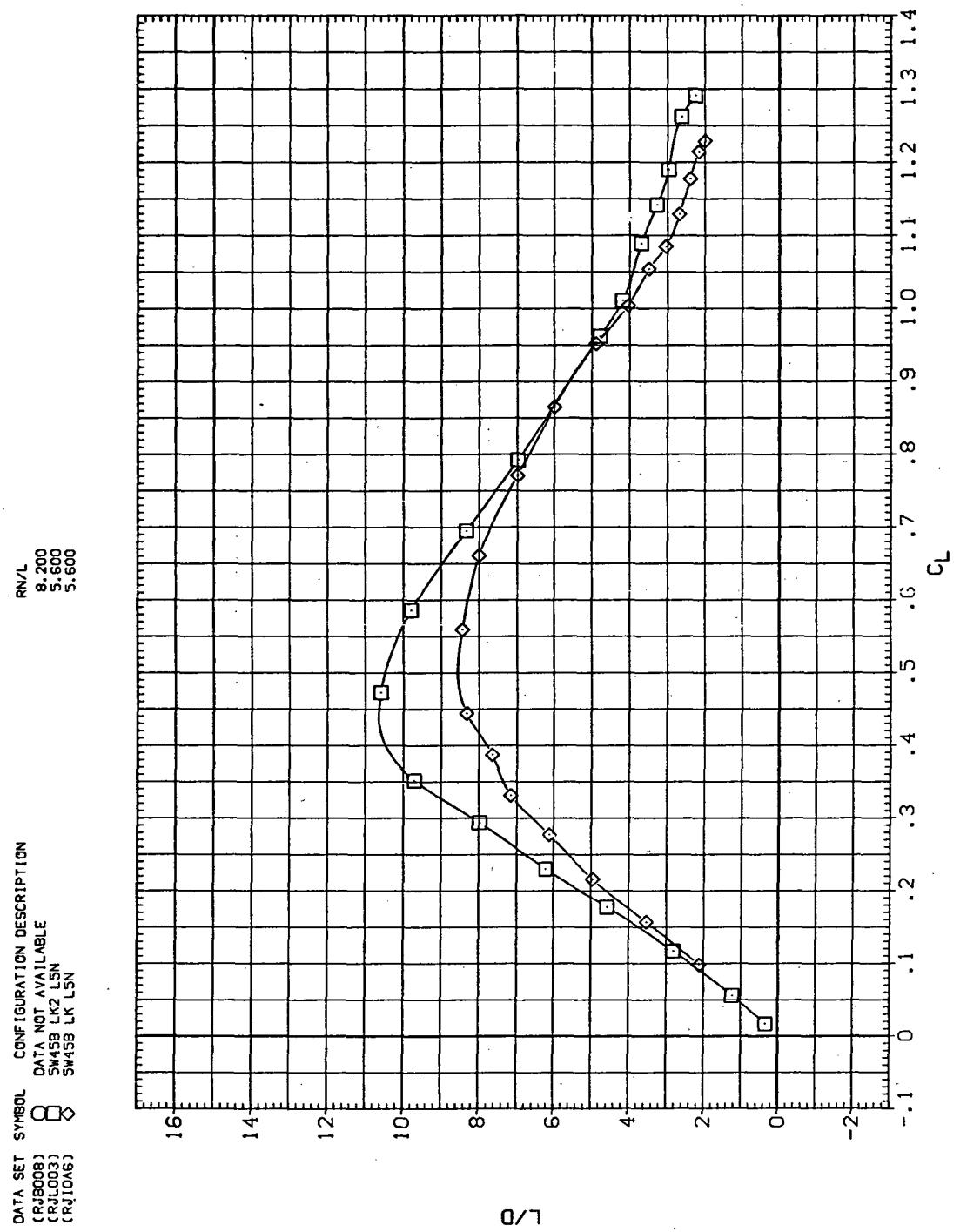
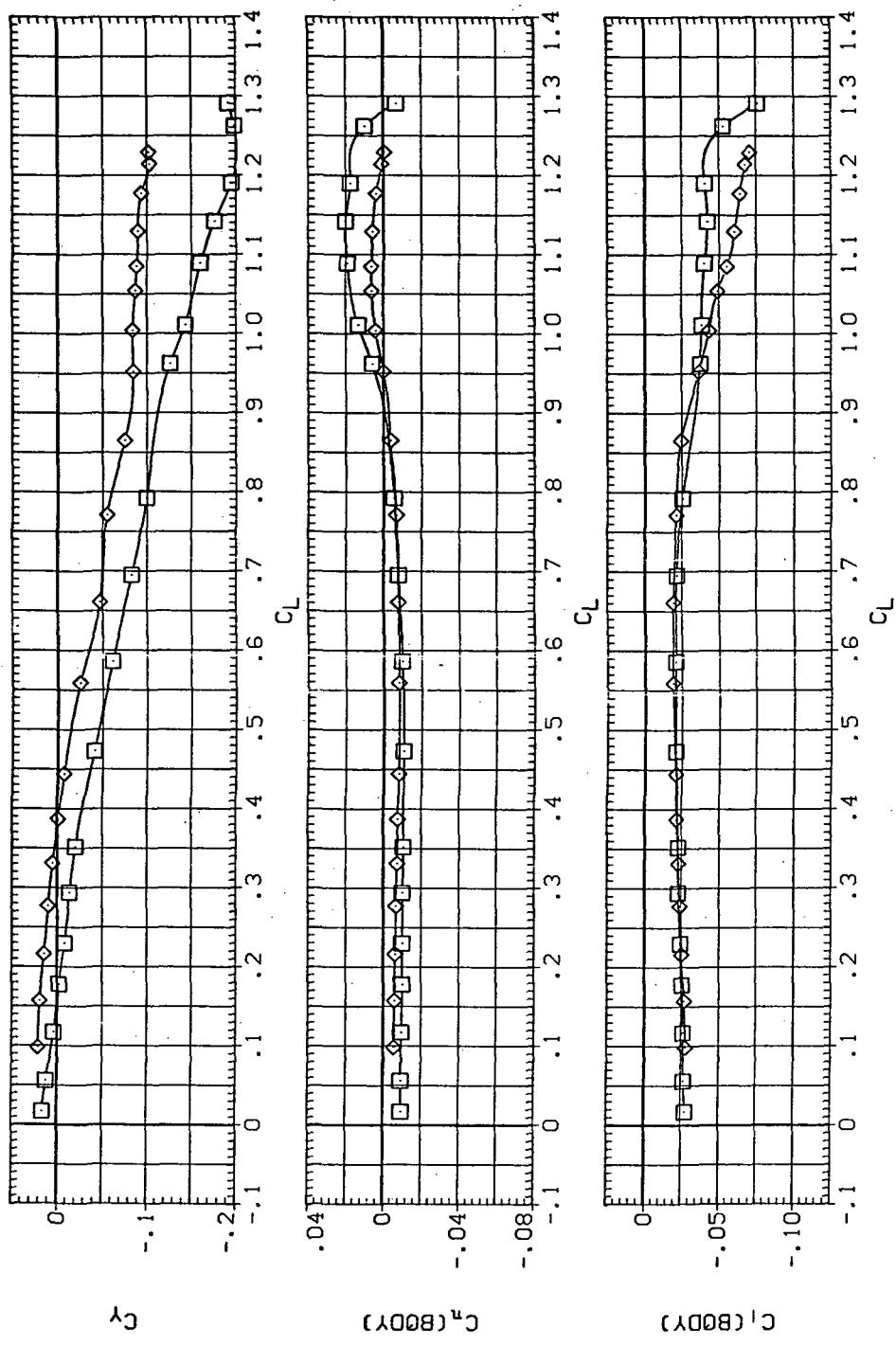


Figure 5.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
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 (RL1003) SW458 LK2 LSN  
 (RJ1046) SW458 LK LSN



(e)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$

Figure 5.— Concluded.

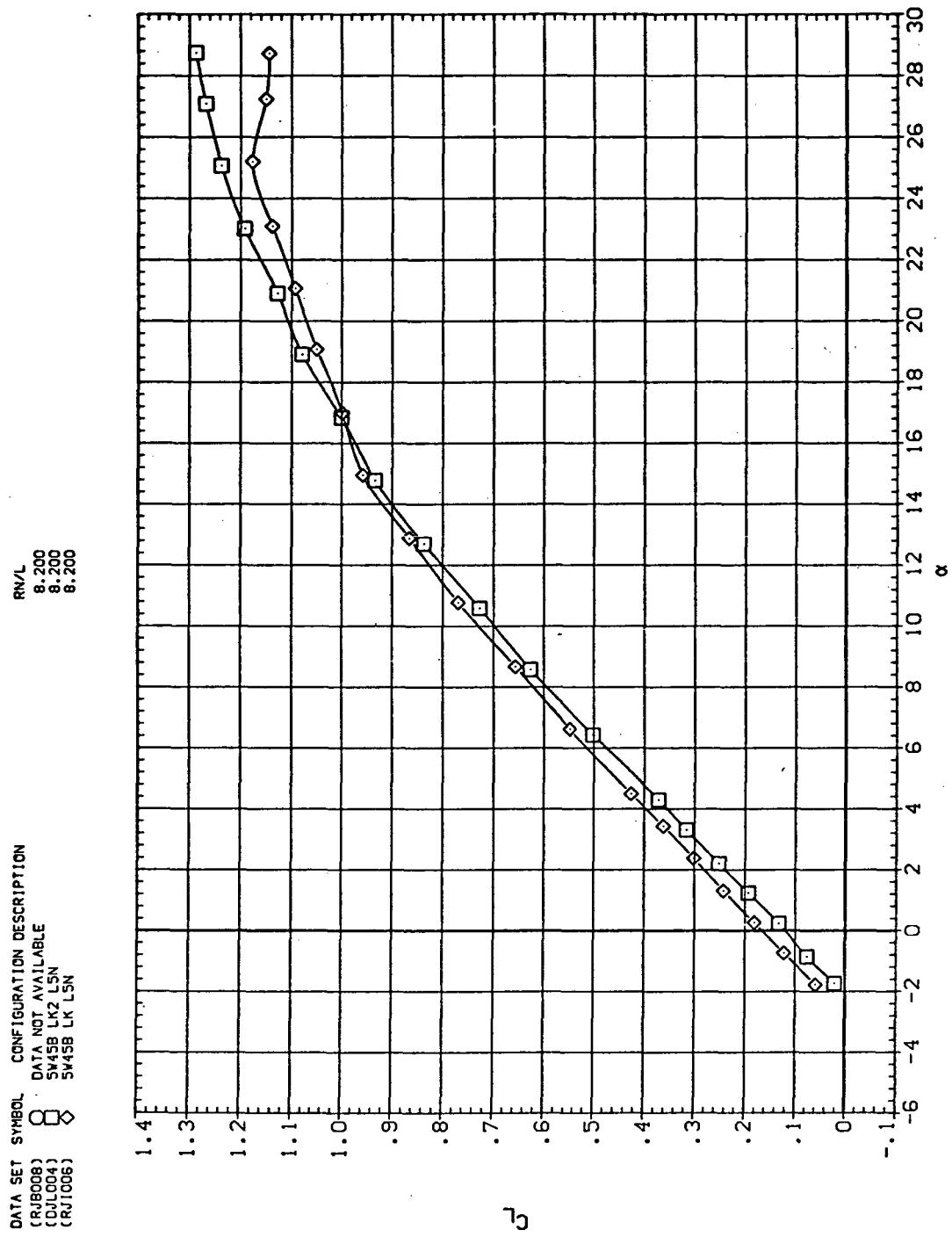
(a)  $C_L$  vs  $\alpha$ 

Figure 6.— Effect of Krüger nose flaps mounted on the drooped-nose flaps deflected  $5^\circ$ , downstream panel only:  $\Lambda = 45^\circ$ ,  $M = 0.40$ .

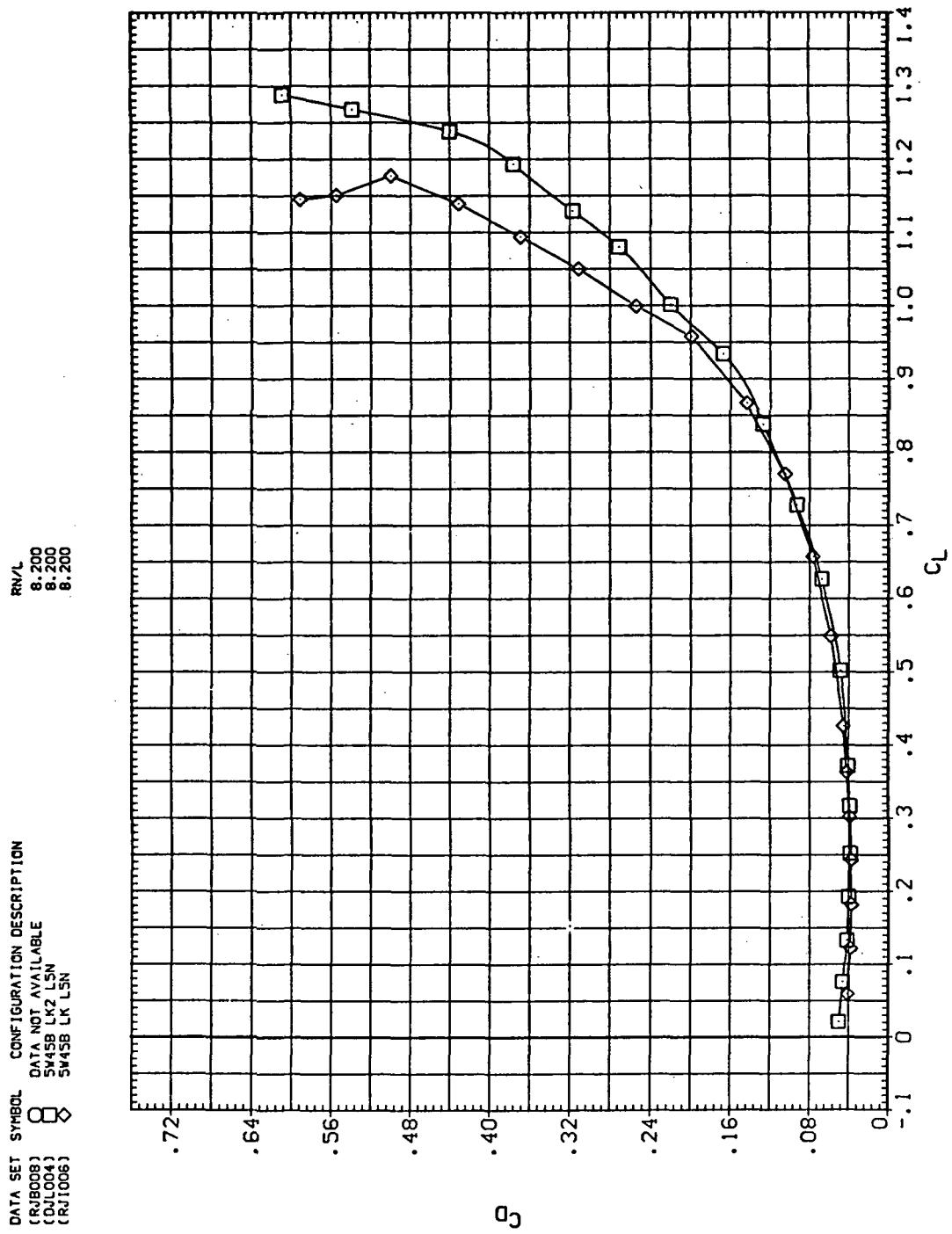
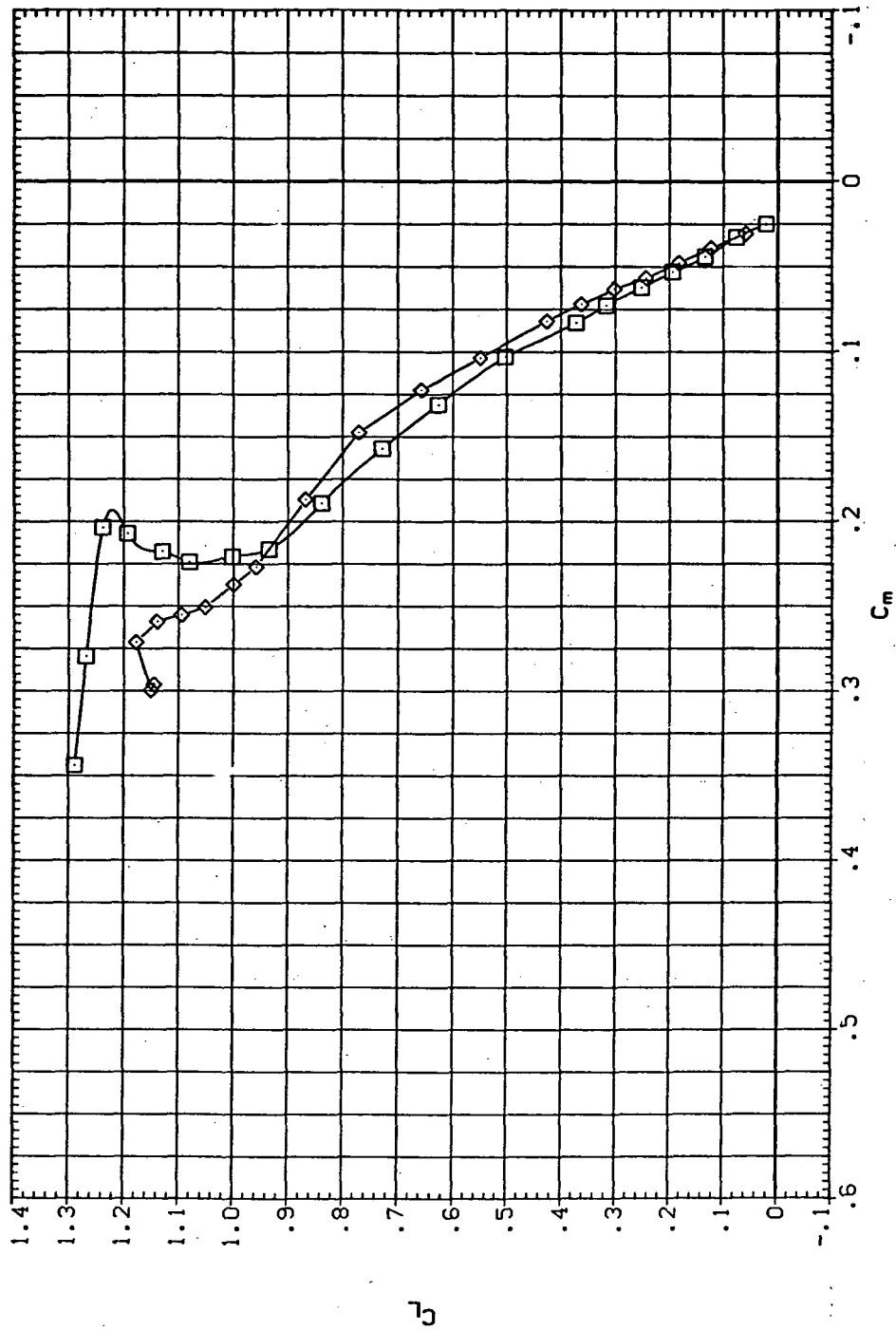


Figure 6.— Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

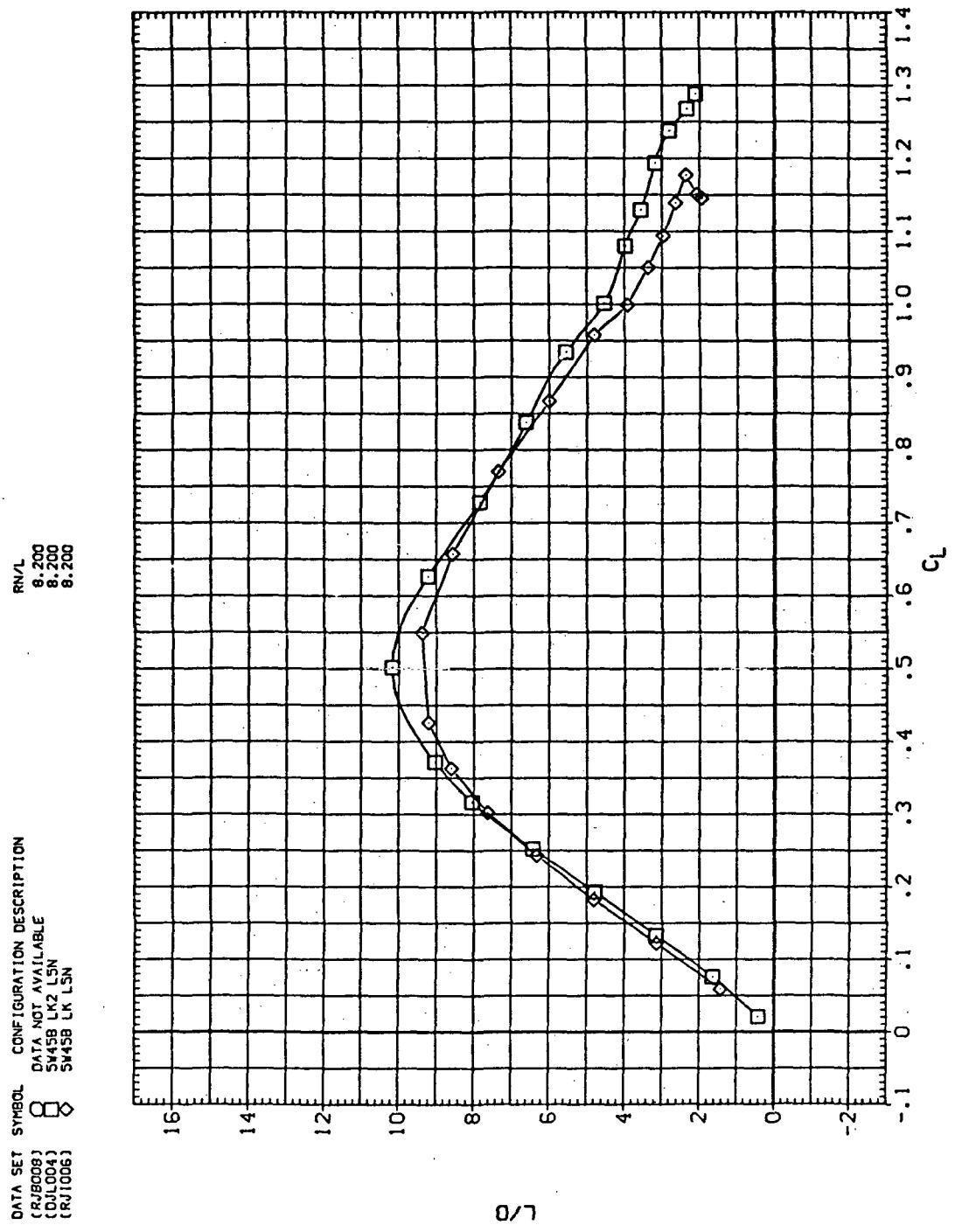
CRJB0081	○	DATA NOT AVAILABLE
CRJLC004	□	SW45B LK2 LSN
CRJ1006	◇	SW45B LK LSN

RNL  
8.200  
8.200  
8.200



(c)  $C_L$  vs  $C_m$

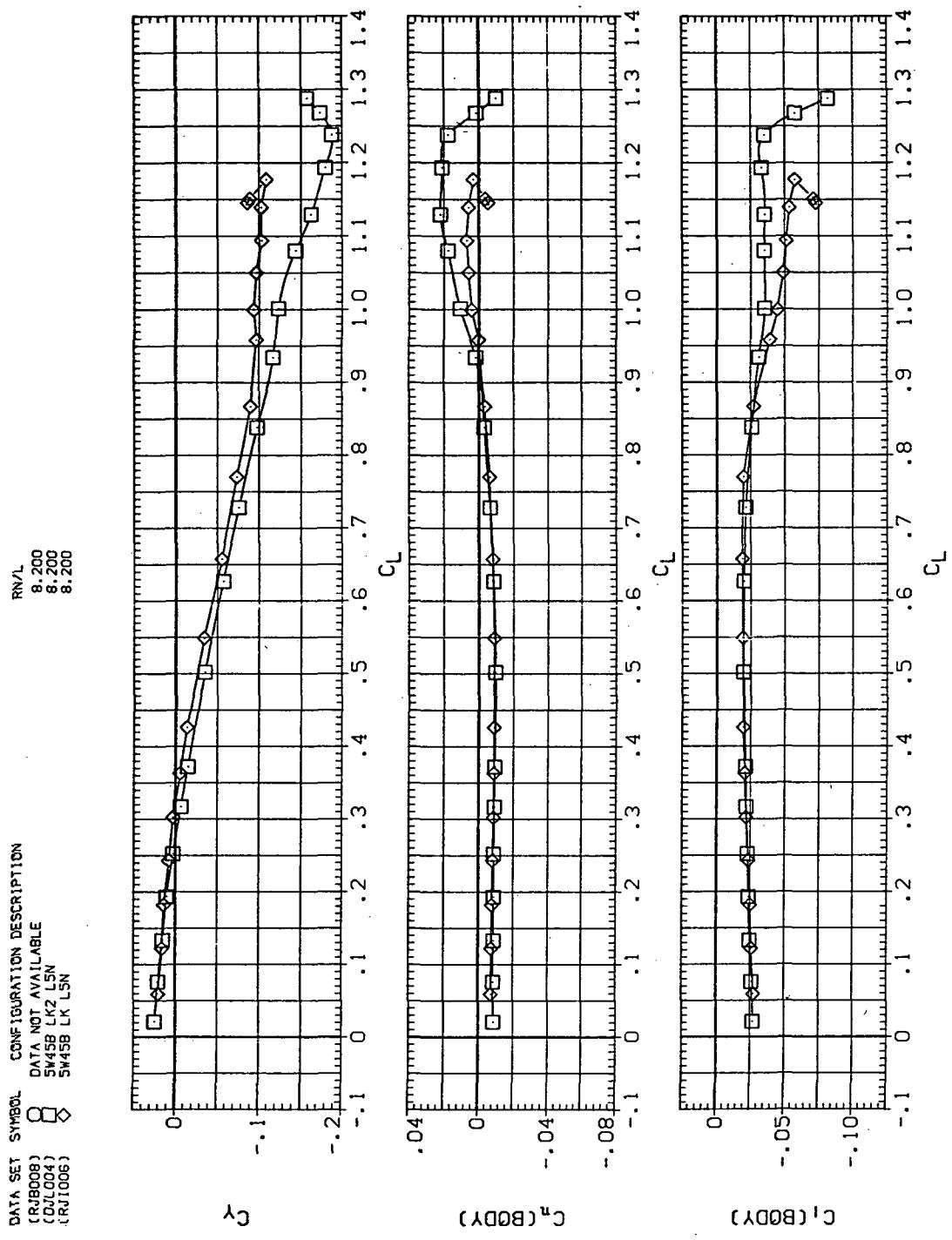
Figure 6.—Continued.



(d)  $L/D$  vs  $C_L$   
Figure 6.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (RJBOOB)  $\square$  DATA NOT AVAILABLE  
 (QJL004)  $\diamond$   
 (RJ1006)  $\diamond$

RNL  
 8.200  
 8.200  
 8.200



(e)  $C_Y$ ,  $C_n$ , and  $C_i$  vs  $C_L$

Figure 6.— Concluded.

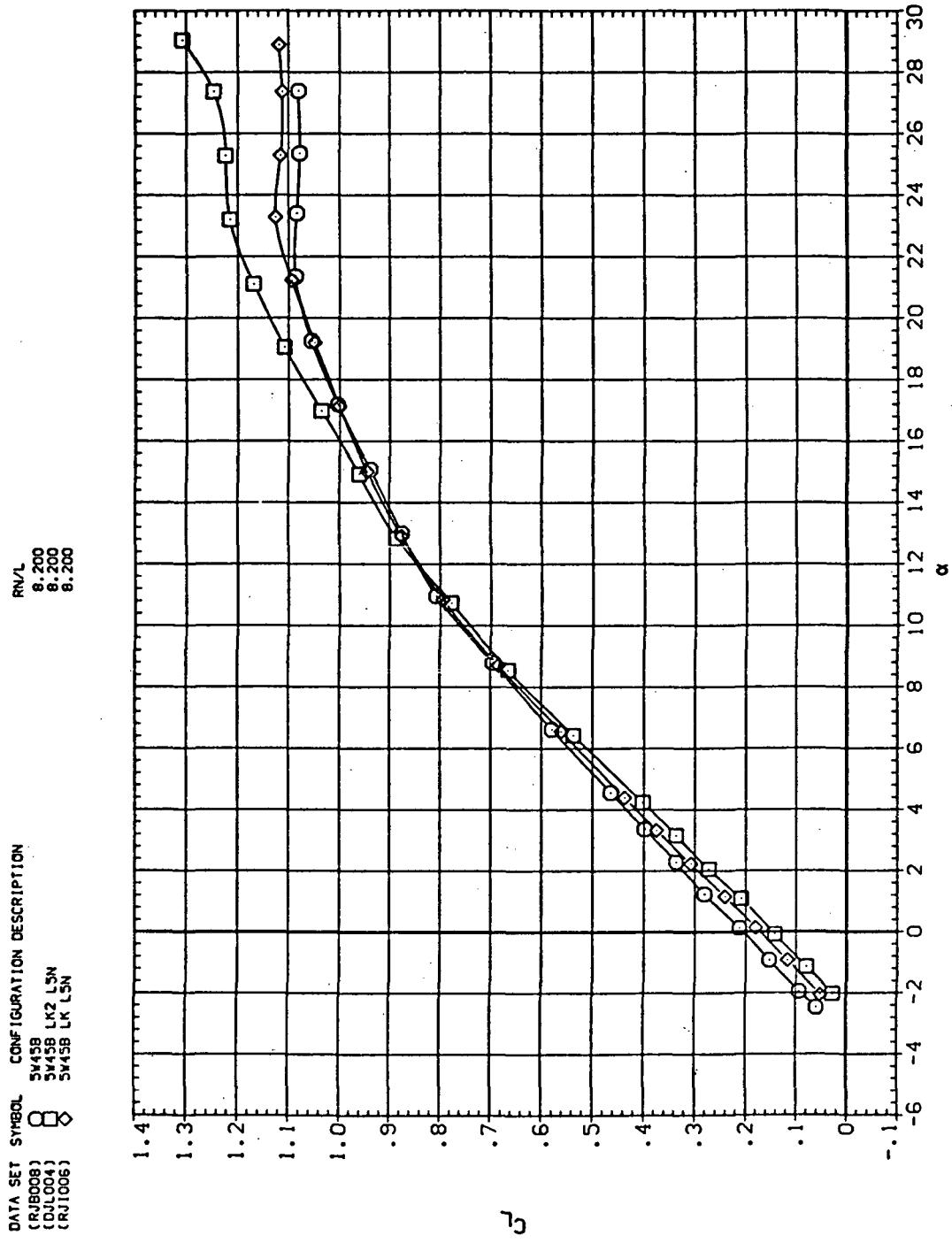
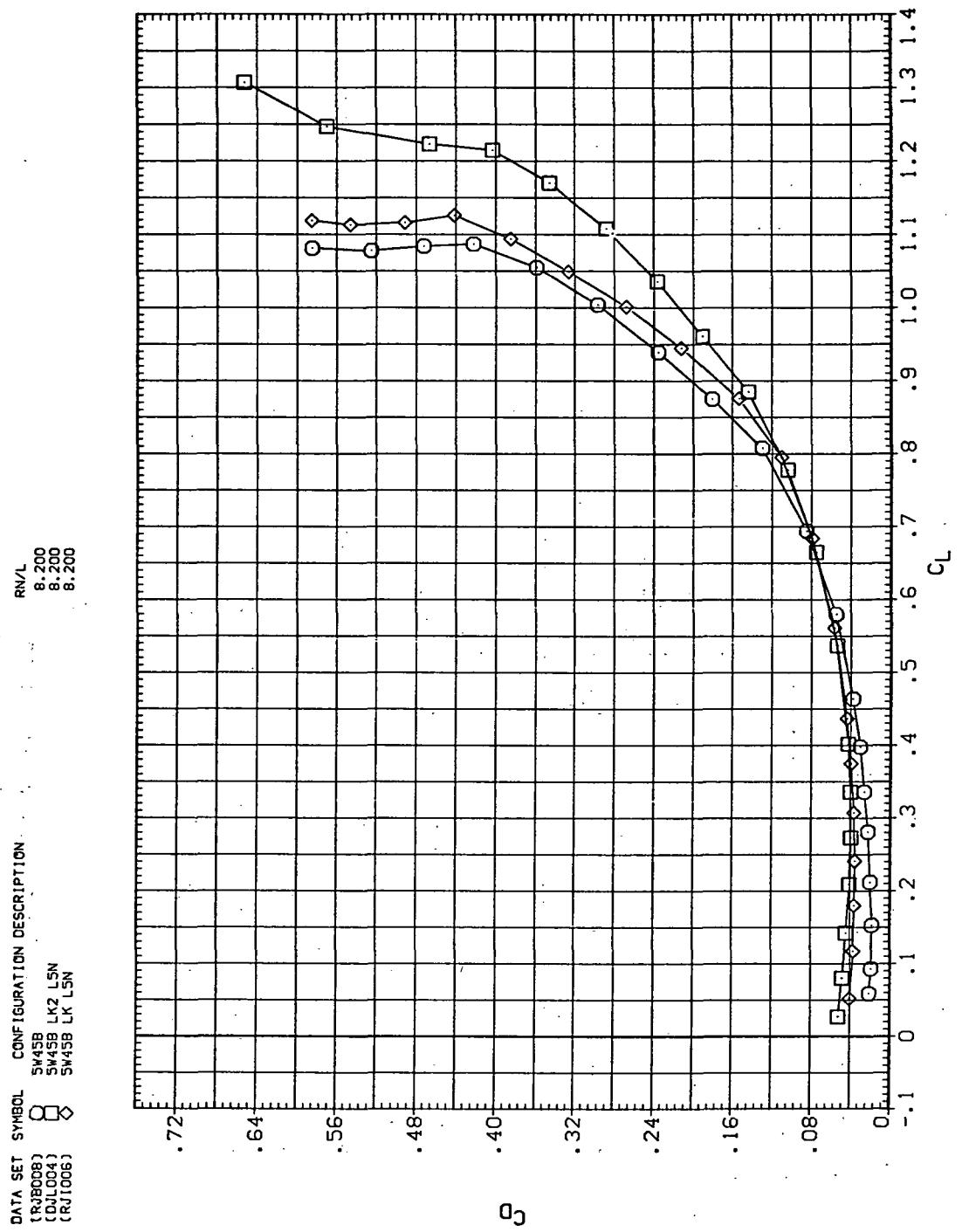
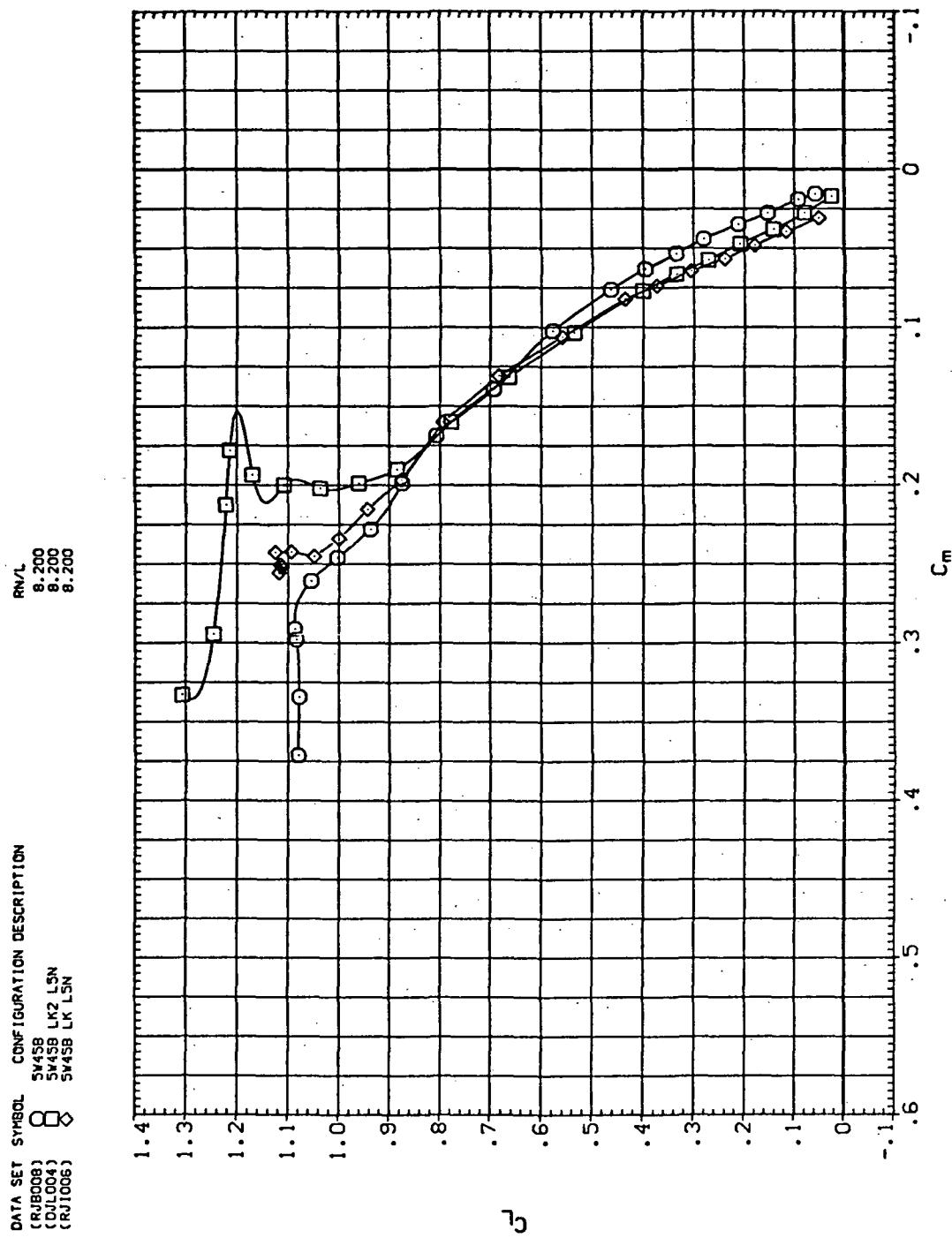
(a)  $C_L$  vs  $\alpha$ 

Figure 7.— Effect of Krüger nose flaps mounted on the drooped-nose flaps deflected  $5^\circ$ , downstream panel only:  $\Lambda = 45^\circ$ ,  $M = 0.60$ .



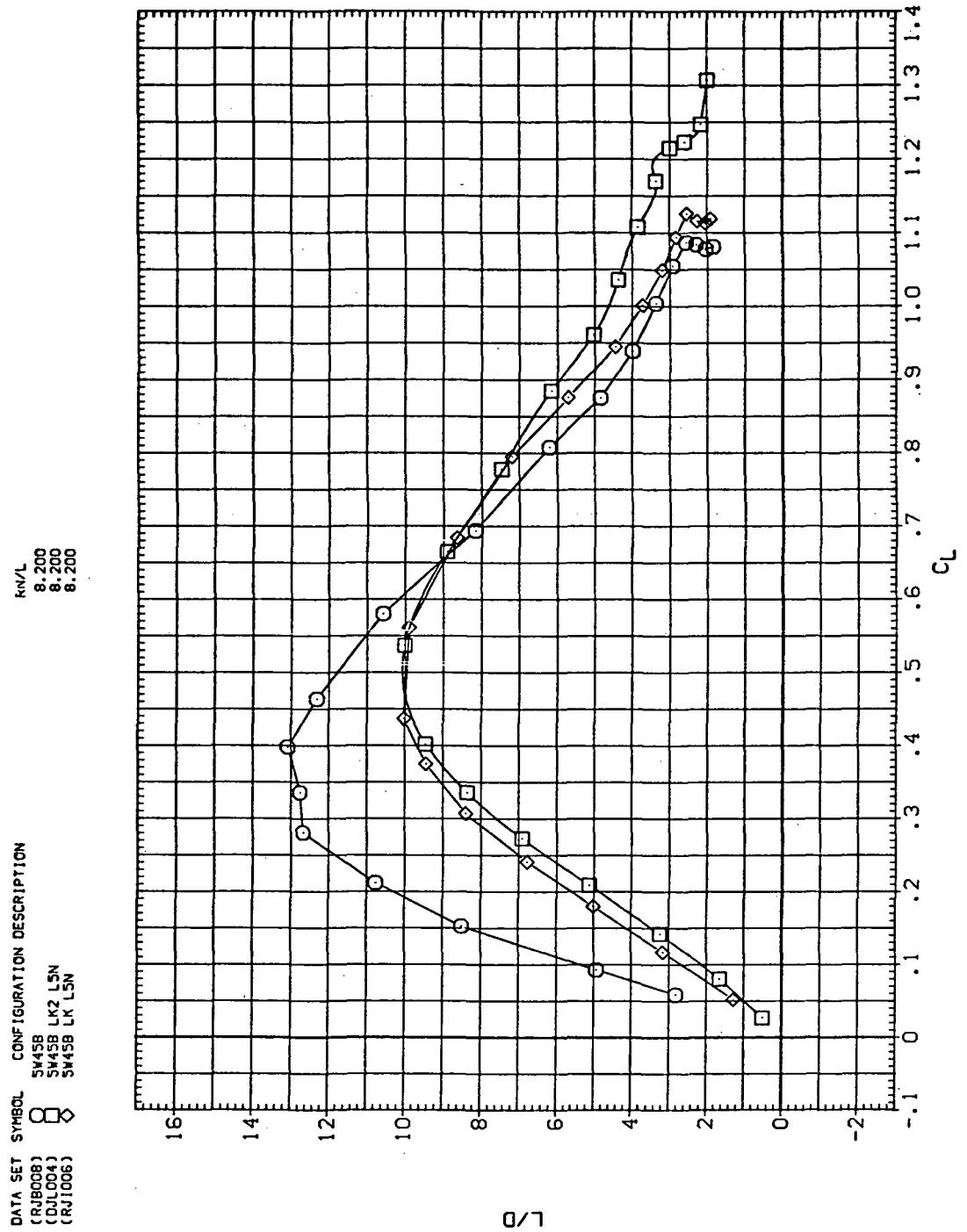
(b)  $C_D$  vs  $C_L$

Figure 7.—Continued.



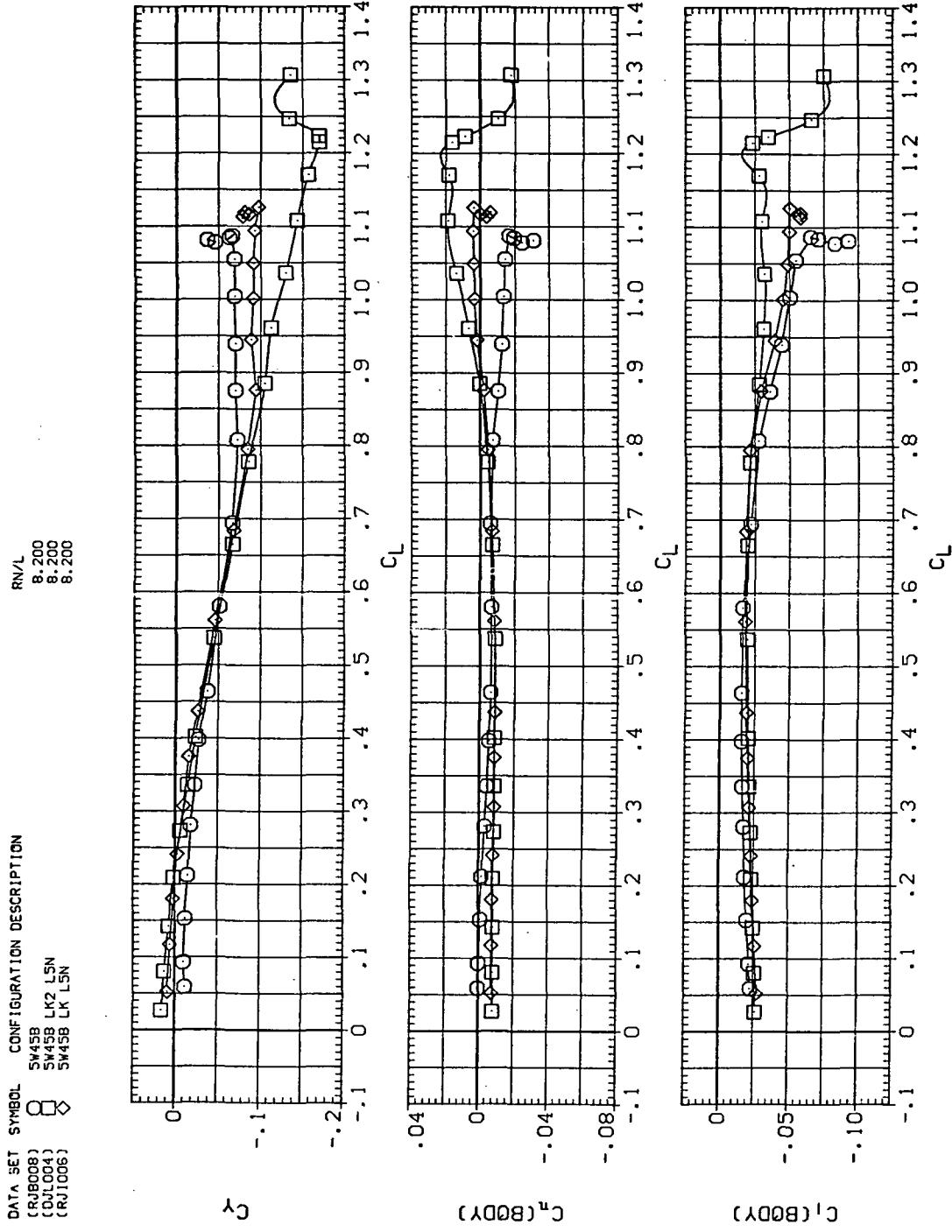
(c)  $C_L$  vs  $C_m$

Figure 7.—Continued.



(d)  $L/D$  vs  $C_L$

Figure 7.—Continued.



(e)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$

Figure 7.— Concluded.

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(RIB008)	□	SW15B
(RIB008)	○	SW15B LK2 LSN
(DL004)	◇	SW15B LK LSN
(RJ1008)	◊	SW45B LK LSN

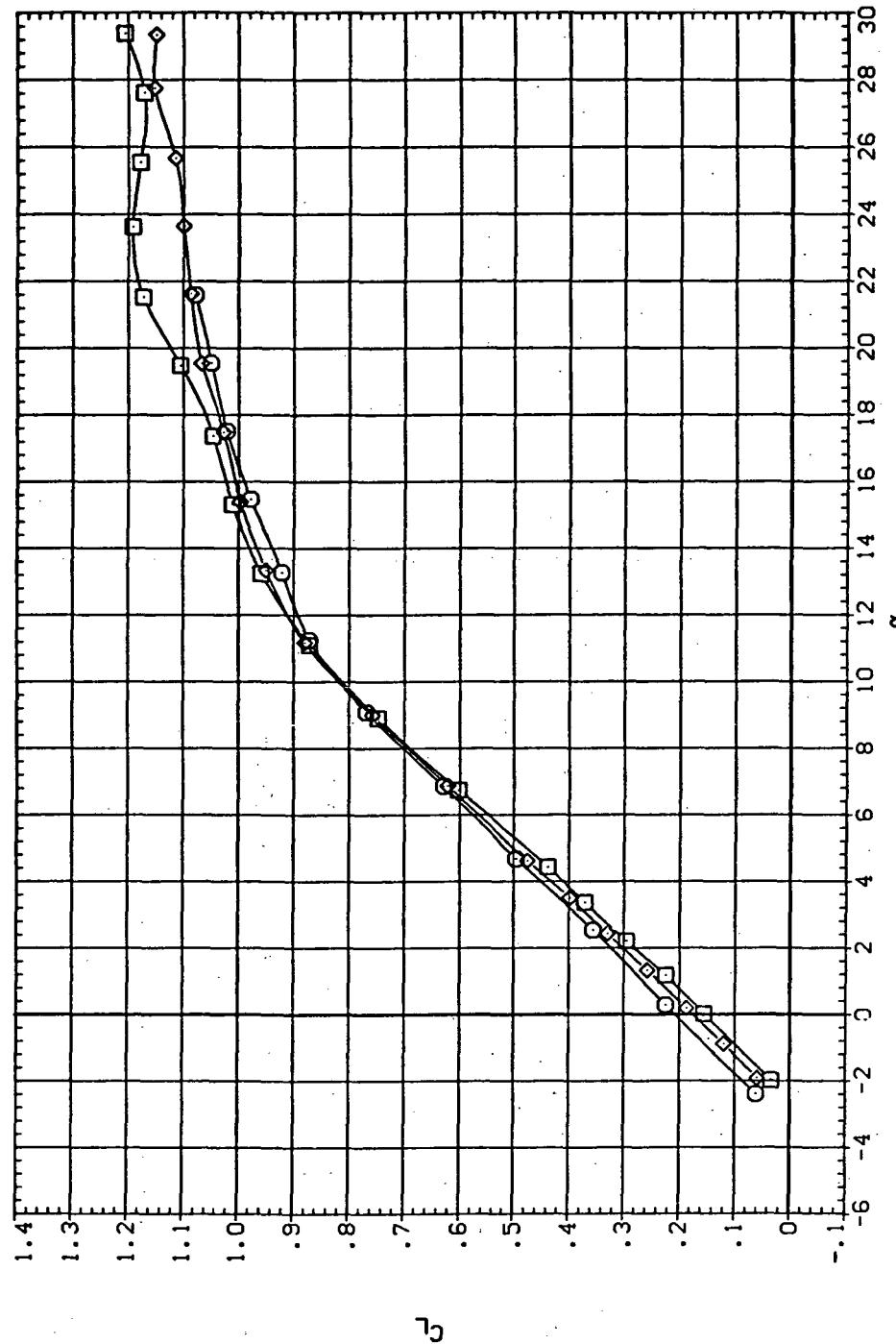
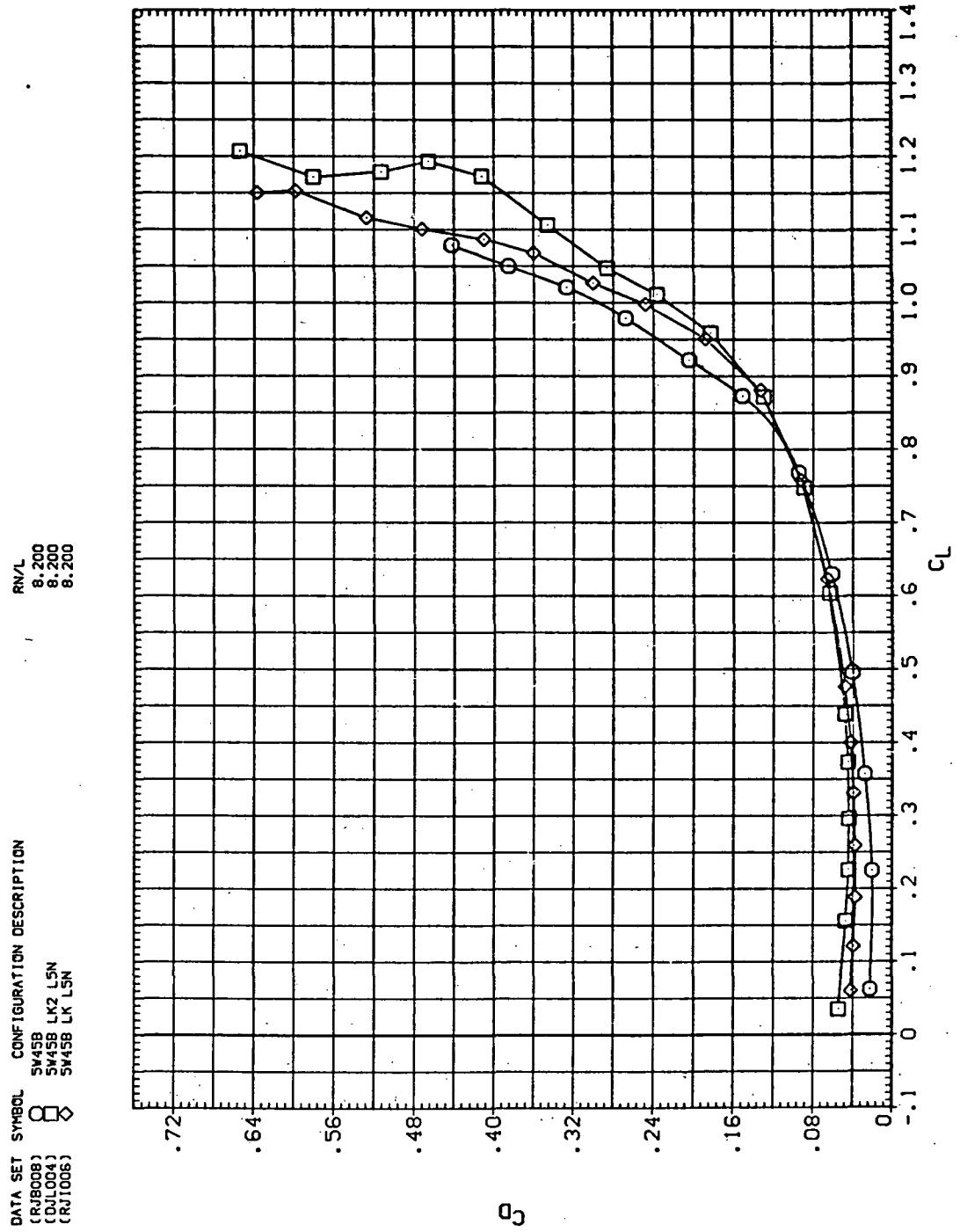
(a)  $C_L$  vs  $\alpha$ 

Figure 8.— Effect of Krüger nose flaps mounted on the drooped-nose flaps deflected  $5^\circ$ , downstream panel only:  $\Lambda = 45^\circ$ ,  $M = 0.80$ .



(b)  $C_D$  vs  $C_L$

Figure 8.—Continued.

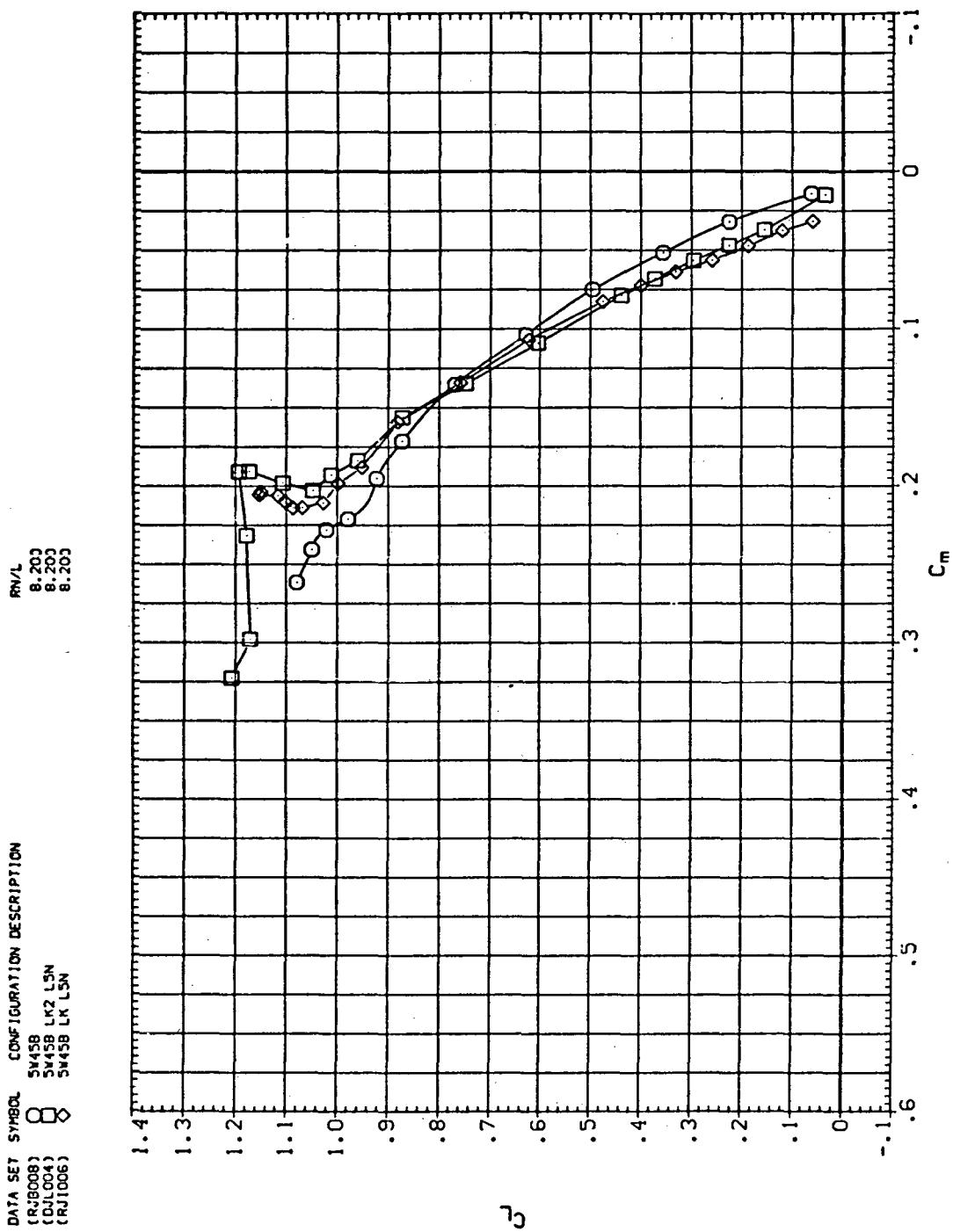
(c)  $C_L$  vs  $C_m$ 

Figure 8.—Continued.

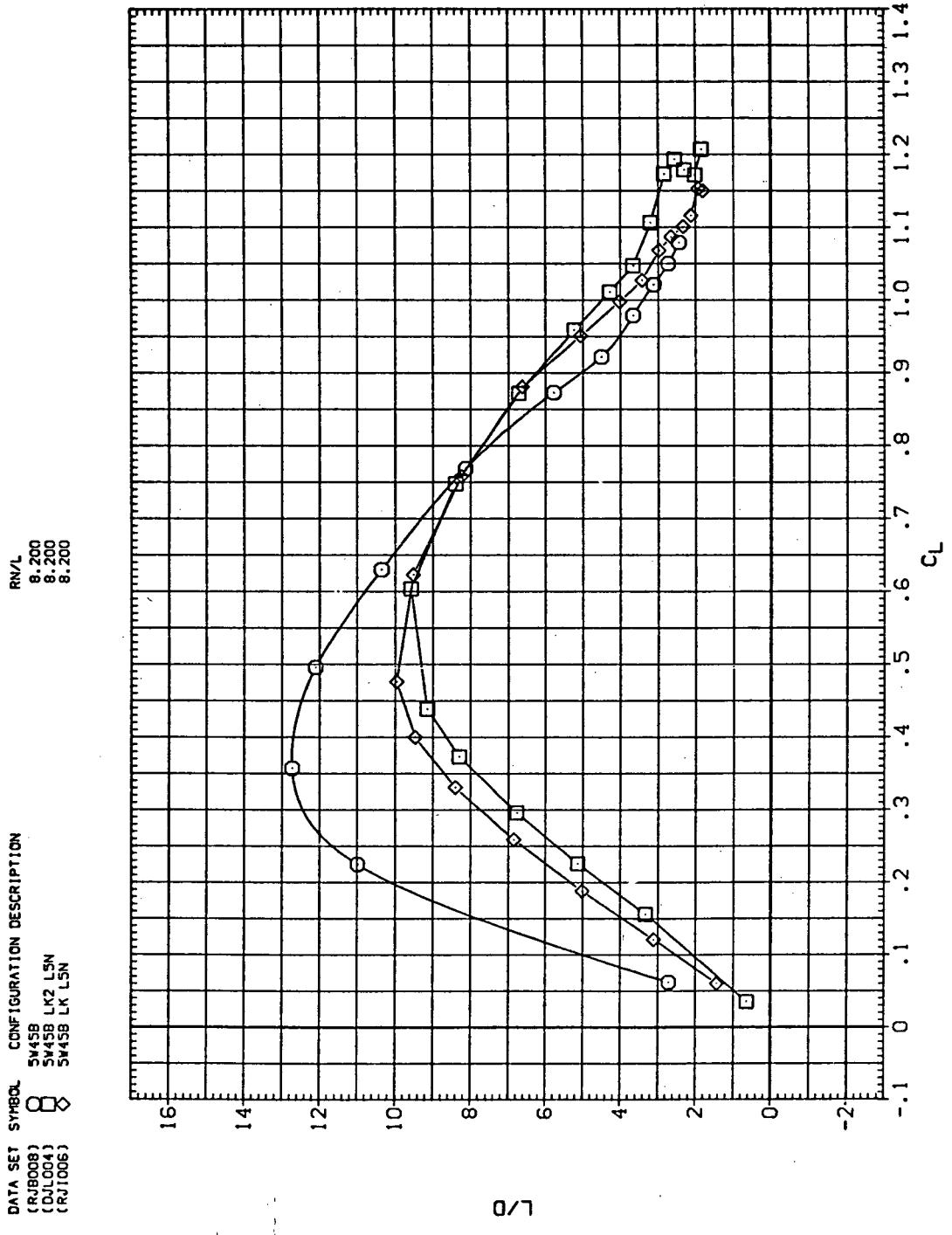
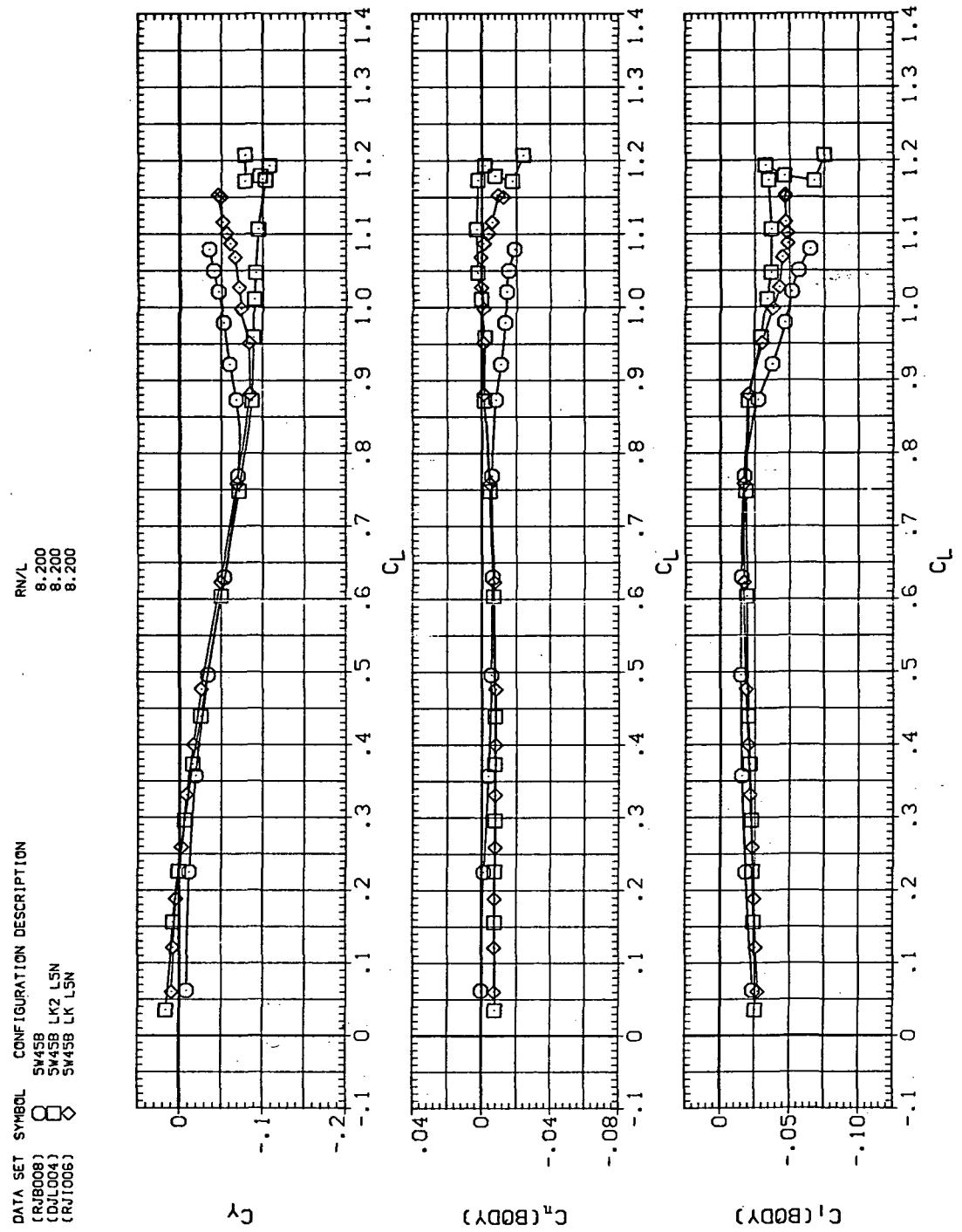


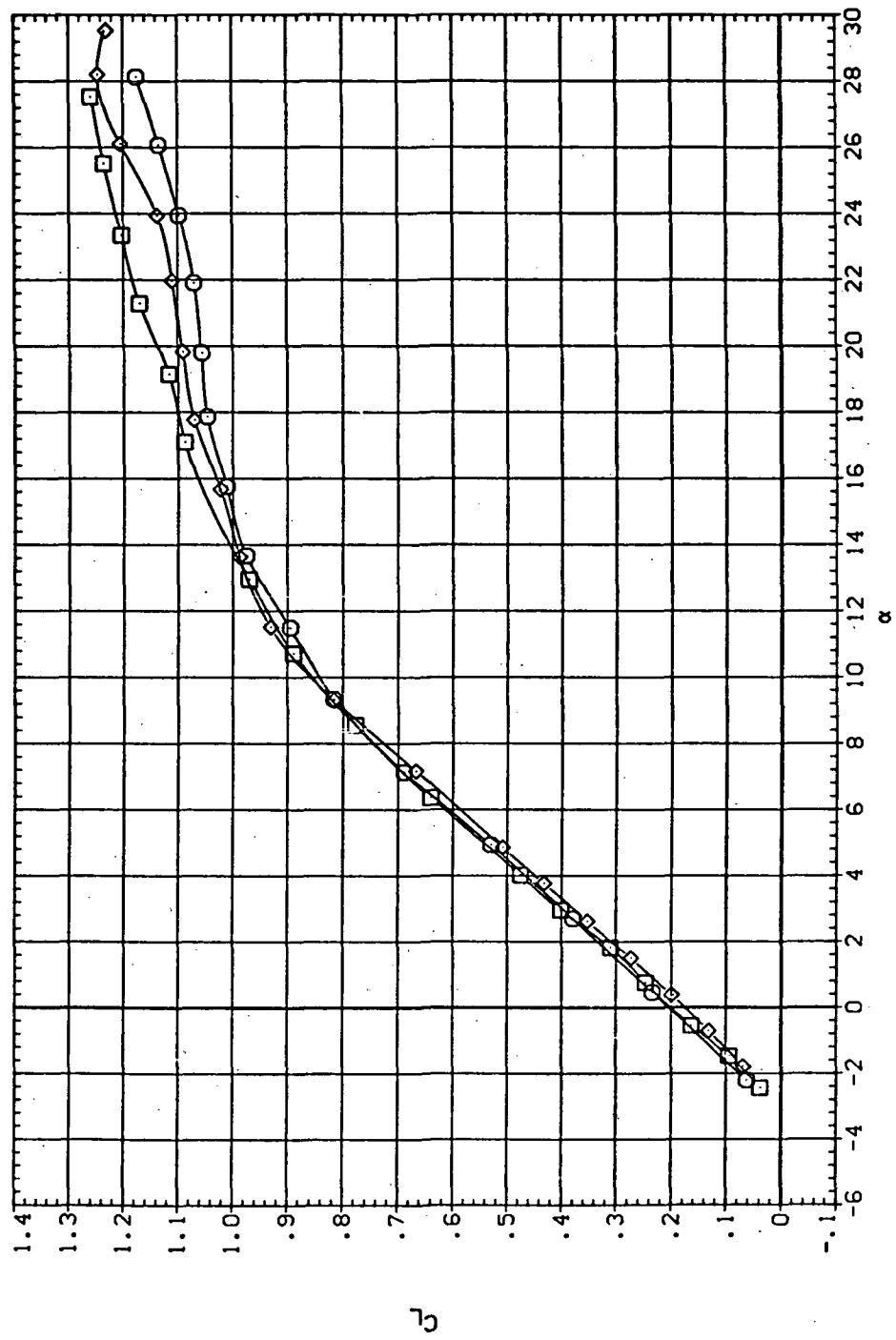
Figure 8.— Continued.



(e)  $C_Y$ ,  $C_n$ , and  $C_i$  vs  $C_L$

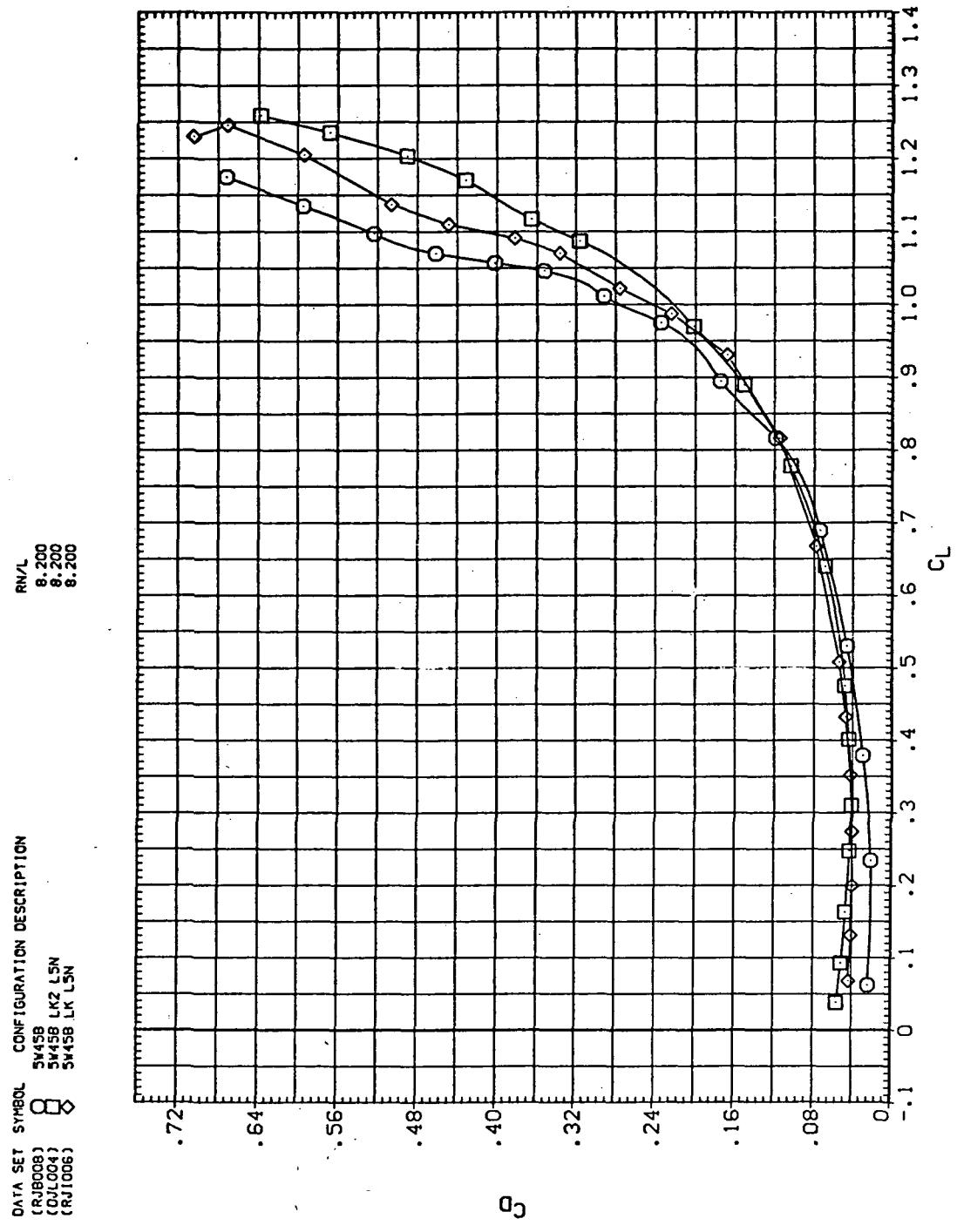
Figure 8.—Concluded.

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(RJB008)	○	SM45B
(RJB008)	◇	SM45B LK LSN
(RJ1006)	□	SM45B LK LSN



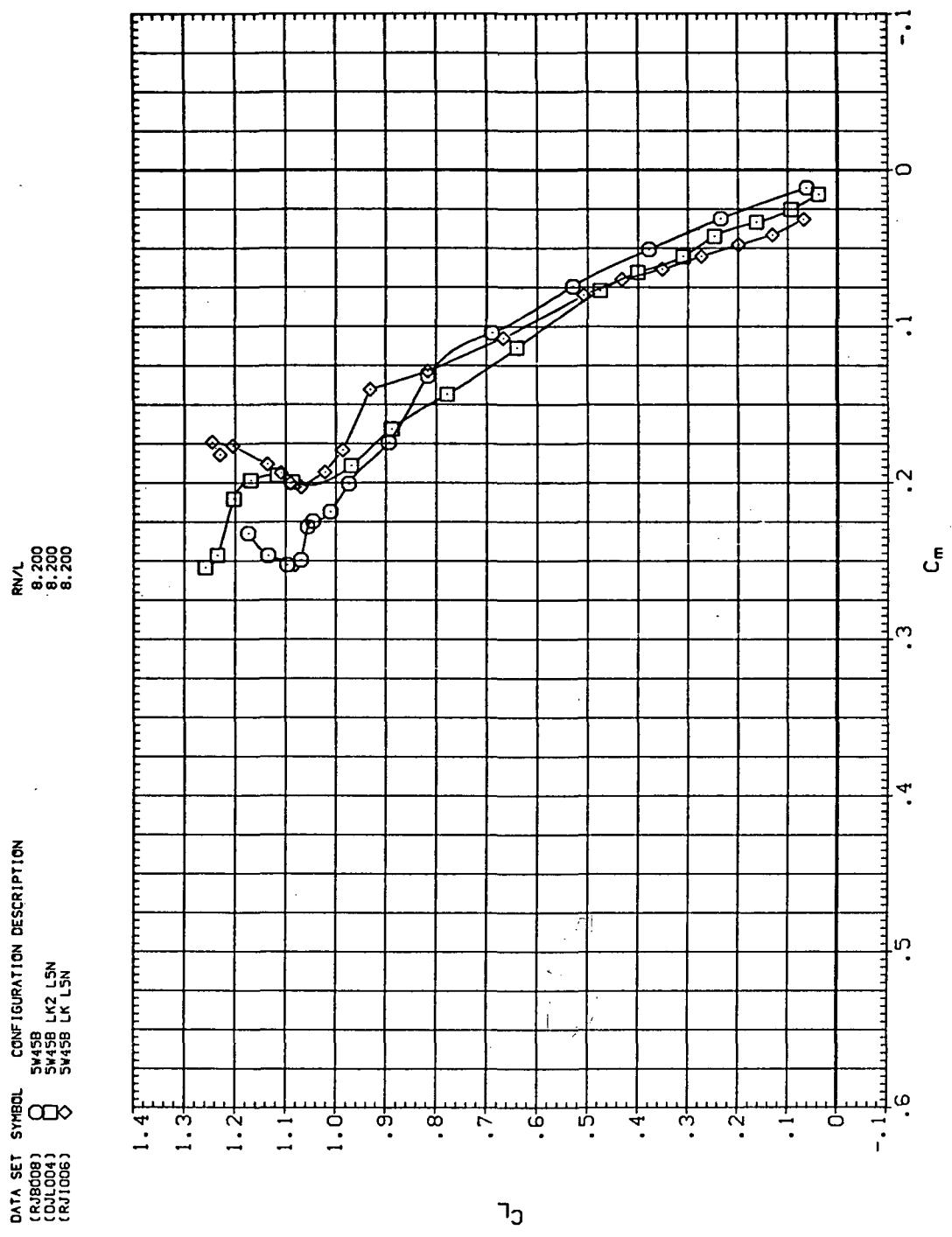
(a)  $C_L$  vs  $\alpha$

Figure 9.— Effect of Krüger nose flaps mounted on the drooped-nose flaps deflected  $5^\circ$ , downstream panel only:  $\Lambda = 45^\circ$ ,  $M = 0.90$ .



(b)  $C_D$  vs  $C_L$

Figure 9.—Continued.



(c)  $C_L$  vs  $C_m$

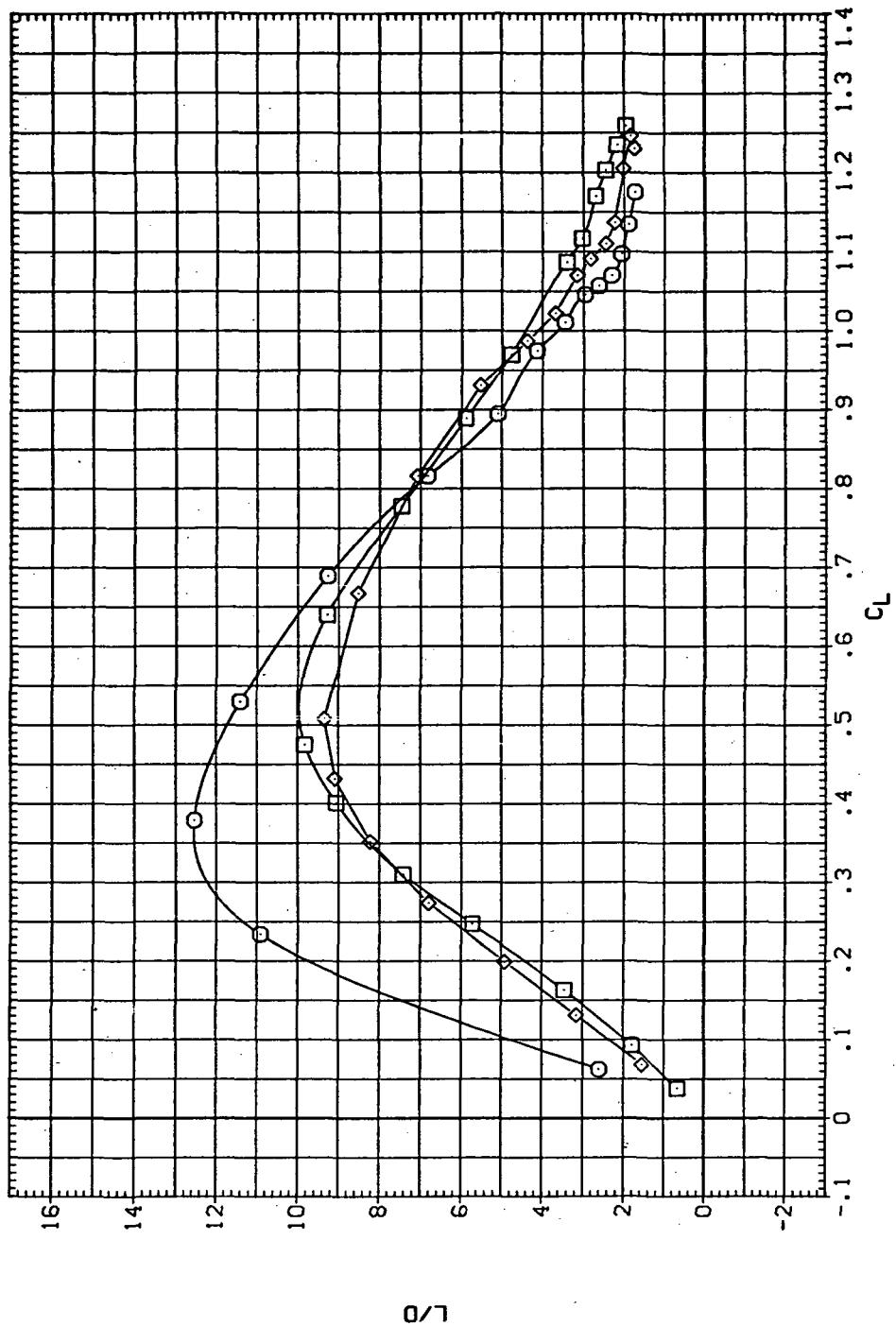
Figure 9.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RJ0008)	□	5W45B
(CJL004)	◇	5W45B LK L5N
(RJ1006)	○	5W45B LK L5N

$R/V_L$

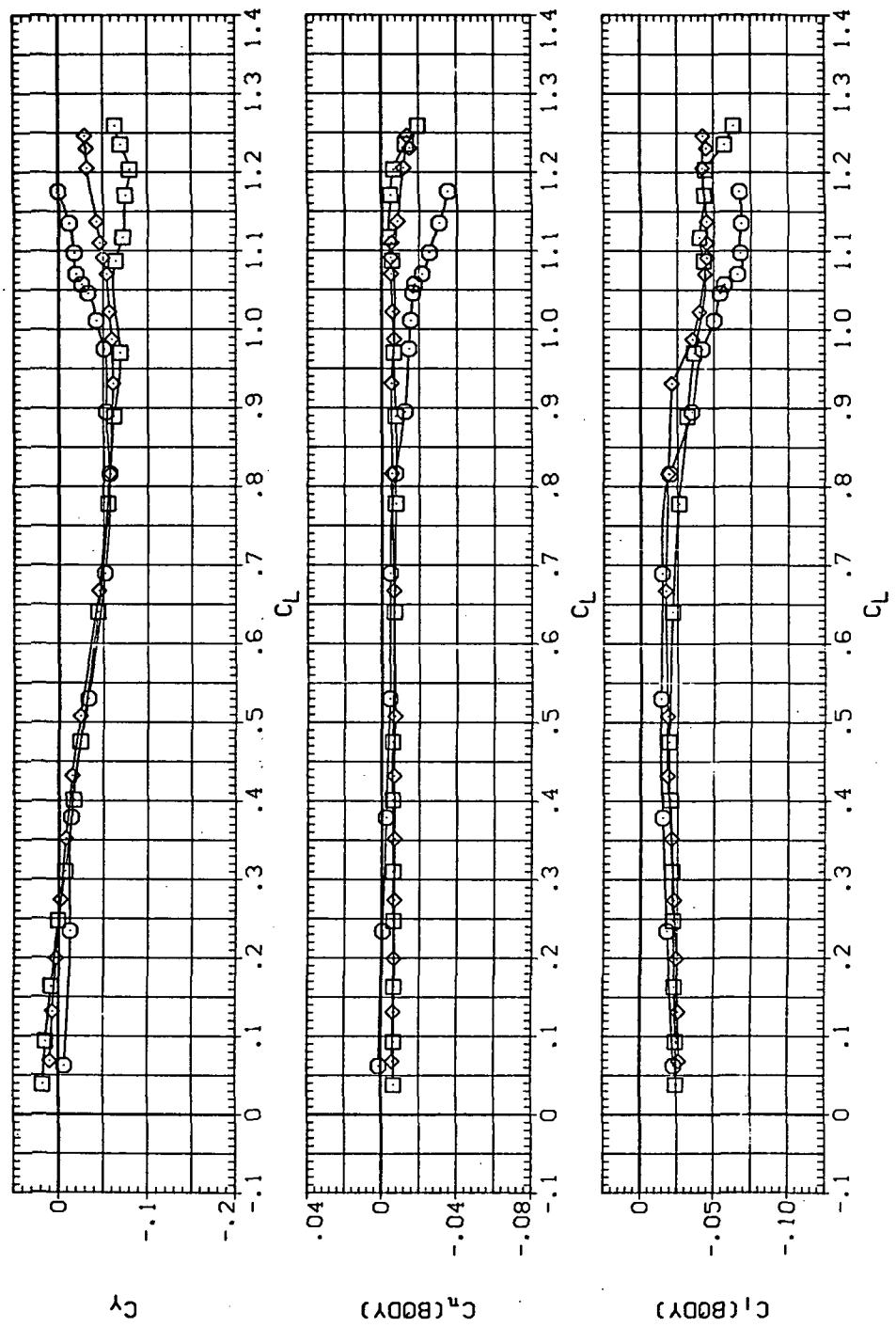
8.200
8.200
8.200



(d)  $L/D$  vs  $C_L$

Figure 9.—Continued.

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(RUB008)	○	SW43B
(CDL004)	□	SW43B LK2 LSN
(DUJ004)	◇	SW43B LK LSN
(RJ1006)	◆	RJ1006



(e)  $C_Y$ ,  $C_n$ , and  $C_i$  vs  $C_L$

Figure 9.— Concluded.

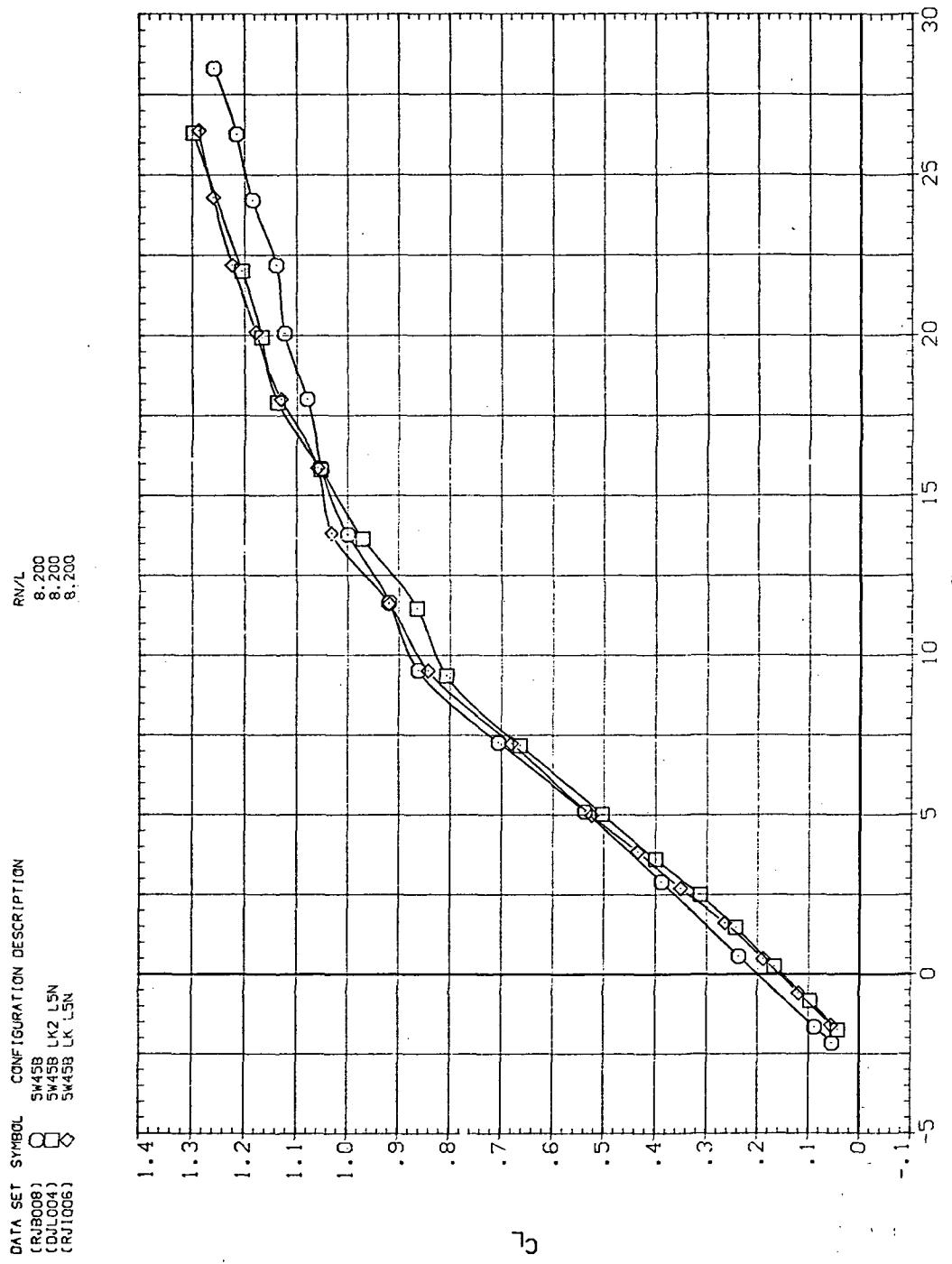
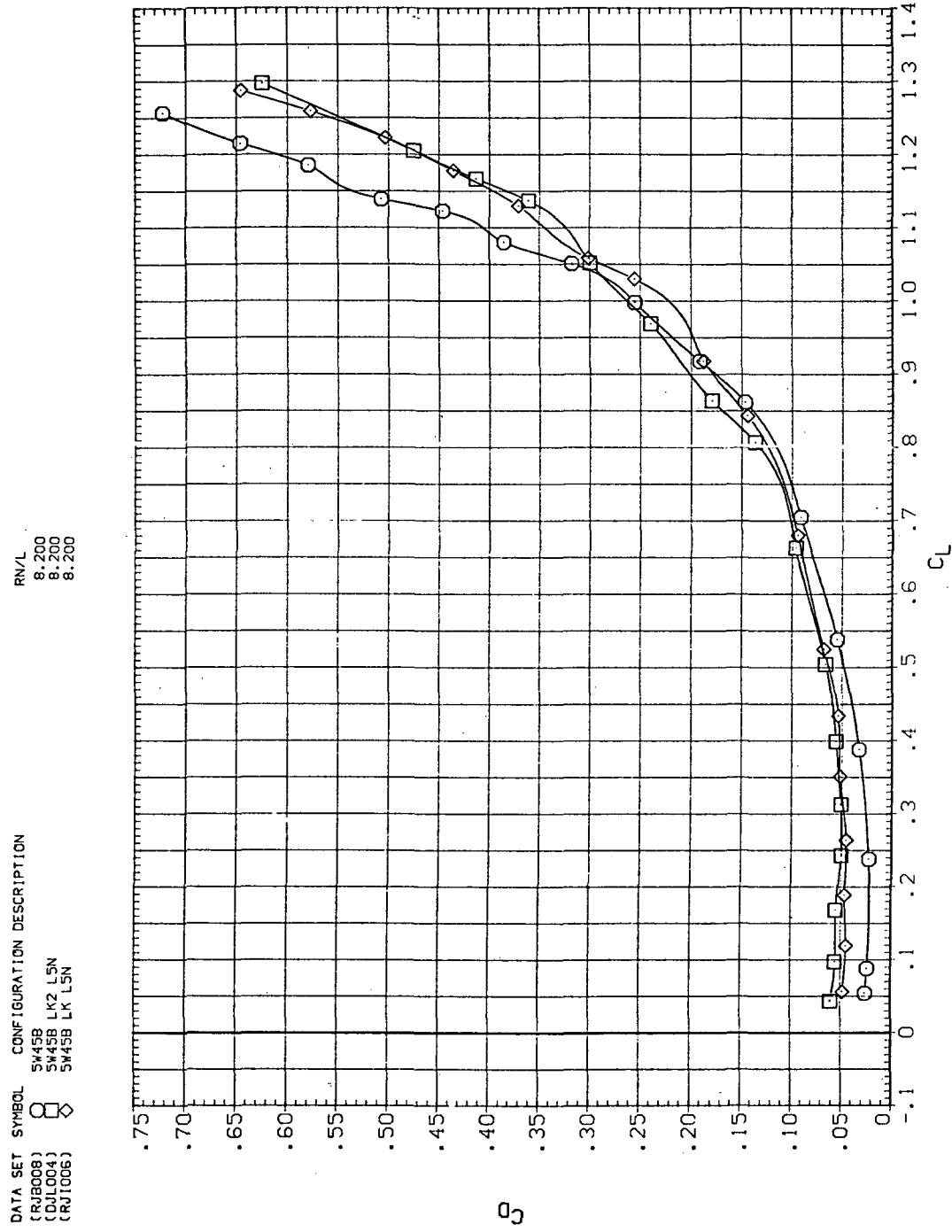
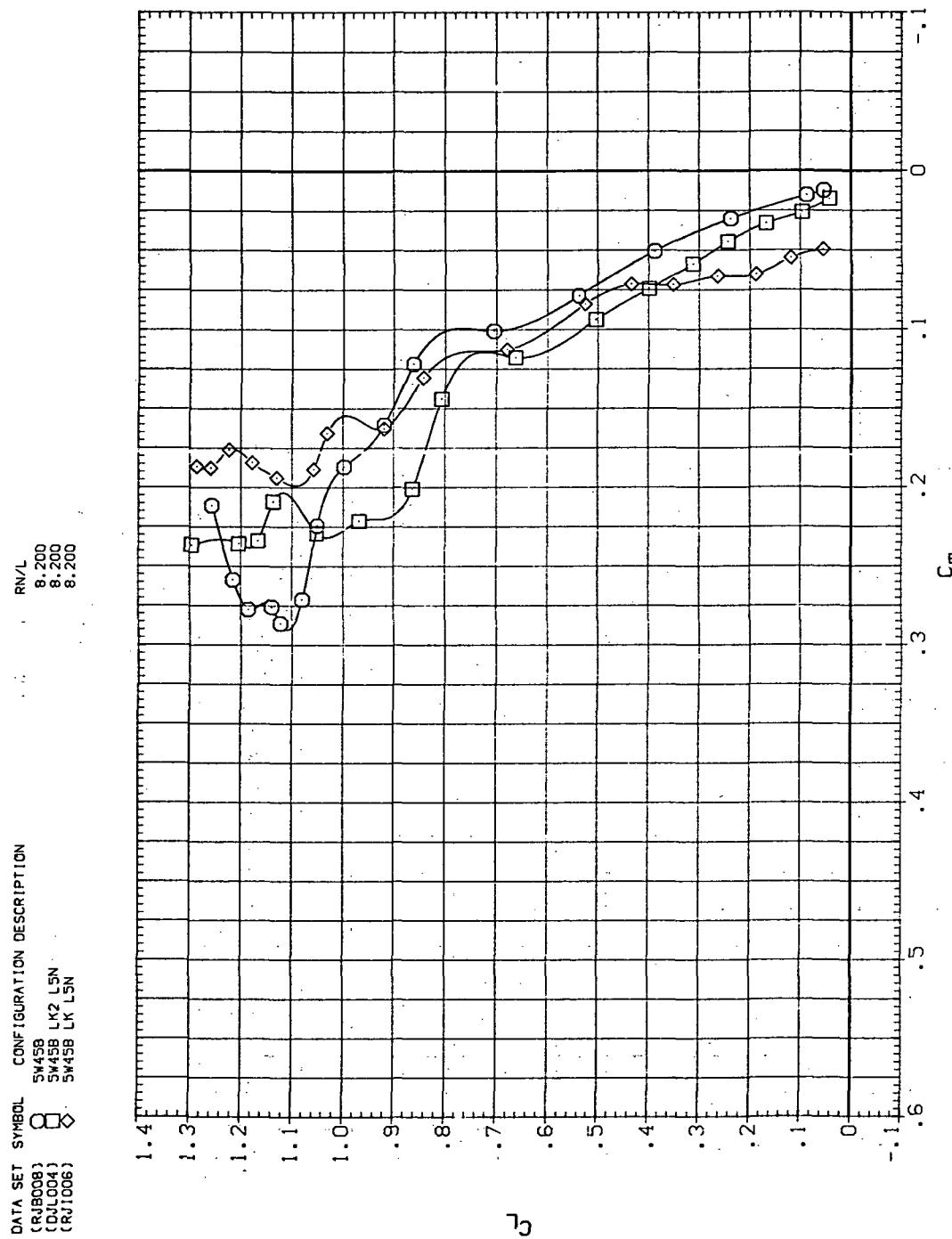
(a)  $C_L$  vs  $\alpha$ 

Figure 10.— Effect of Krüger nose flaps mounted on the drooped-nose flaps deflected  $5^\circ$ , downstream panel only:  $\Lambda = 45^\circ, M = 0.95$ .



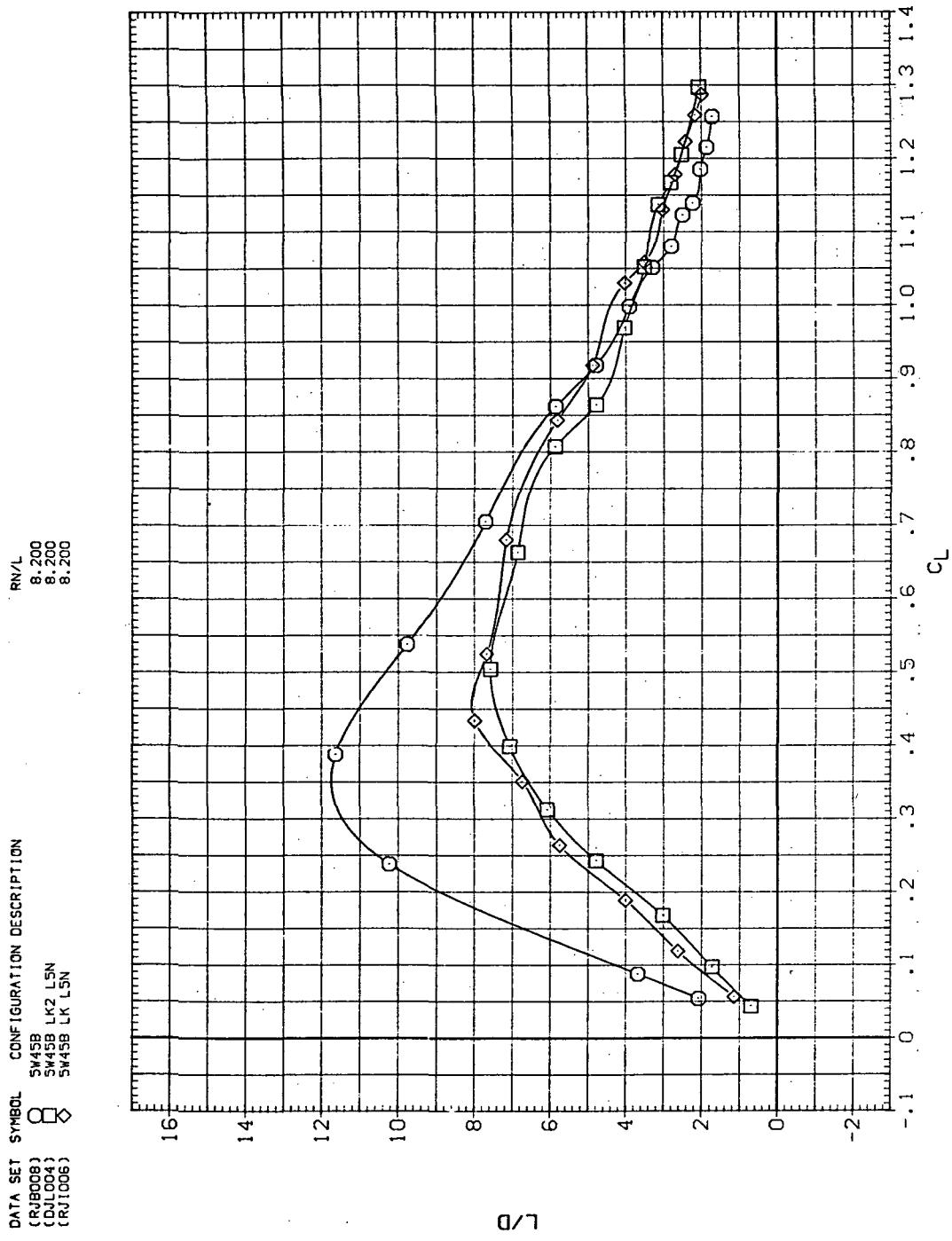
(b)  $C_D$  vs  $C_L$

Figure 10.— Continued.



(c)  $C_L$  vs  $C_m$

Figure 10.—Continued.

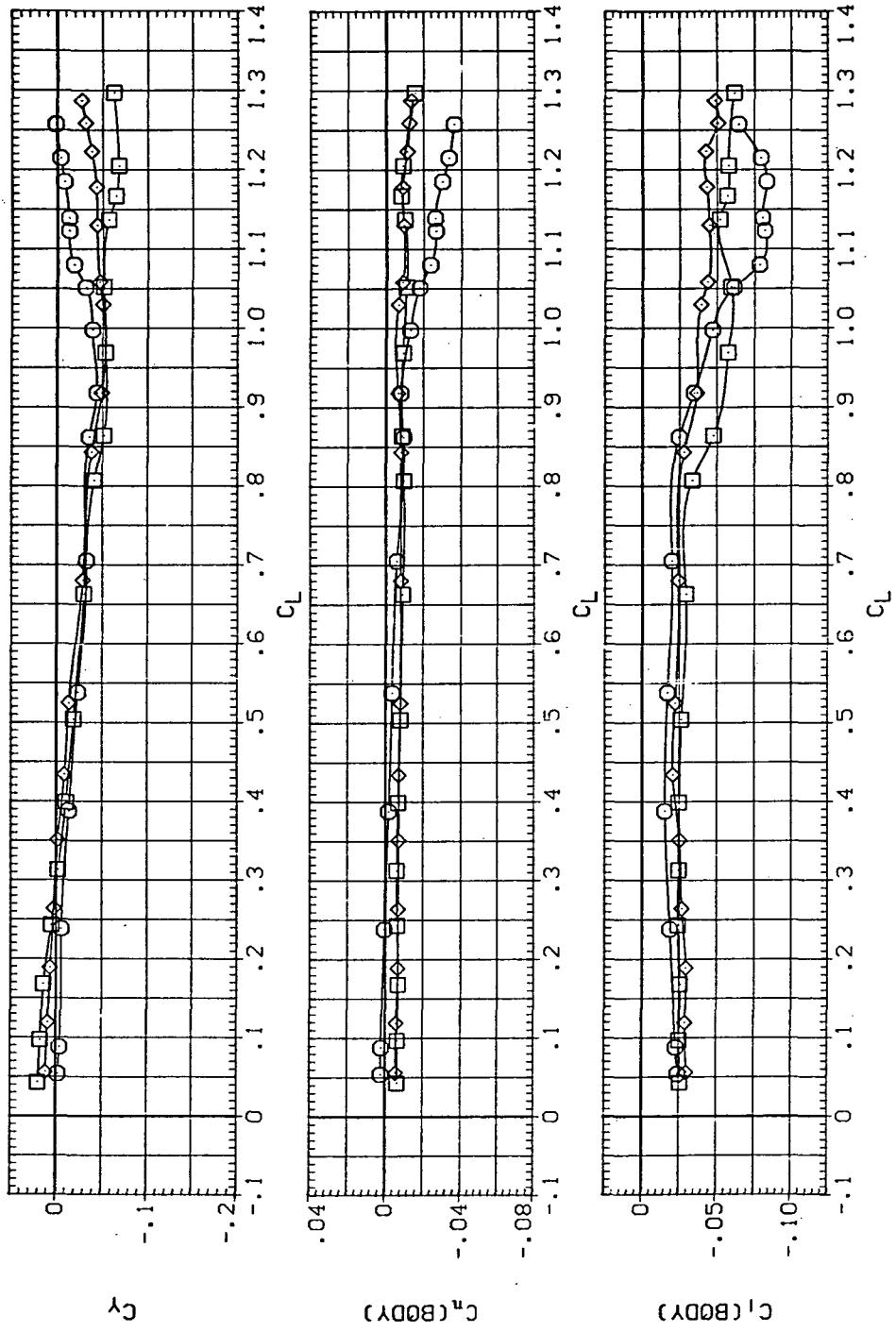


(d)  $L/D$  vs  $C_L$

Figure 10.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (RJ1008)  $\circ$  SW158  
 (DIL004)  $\diamond$  SW58 LK2 LSN  
 (RJ1006)  $\square$  SW458 LK LSN

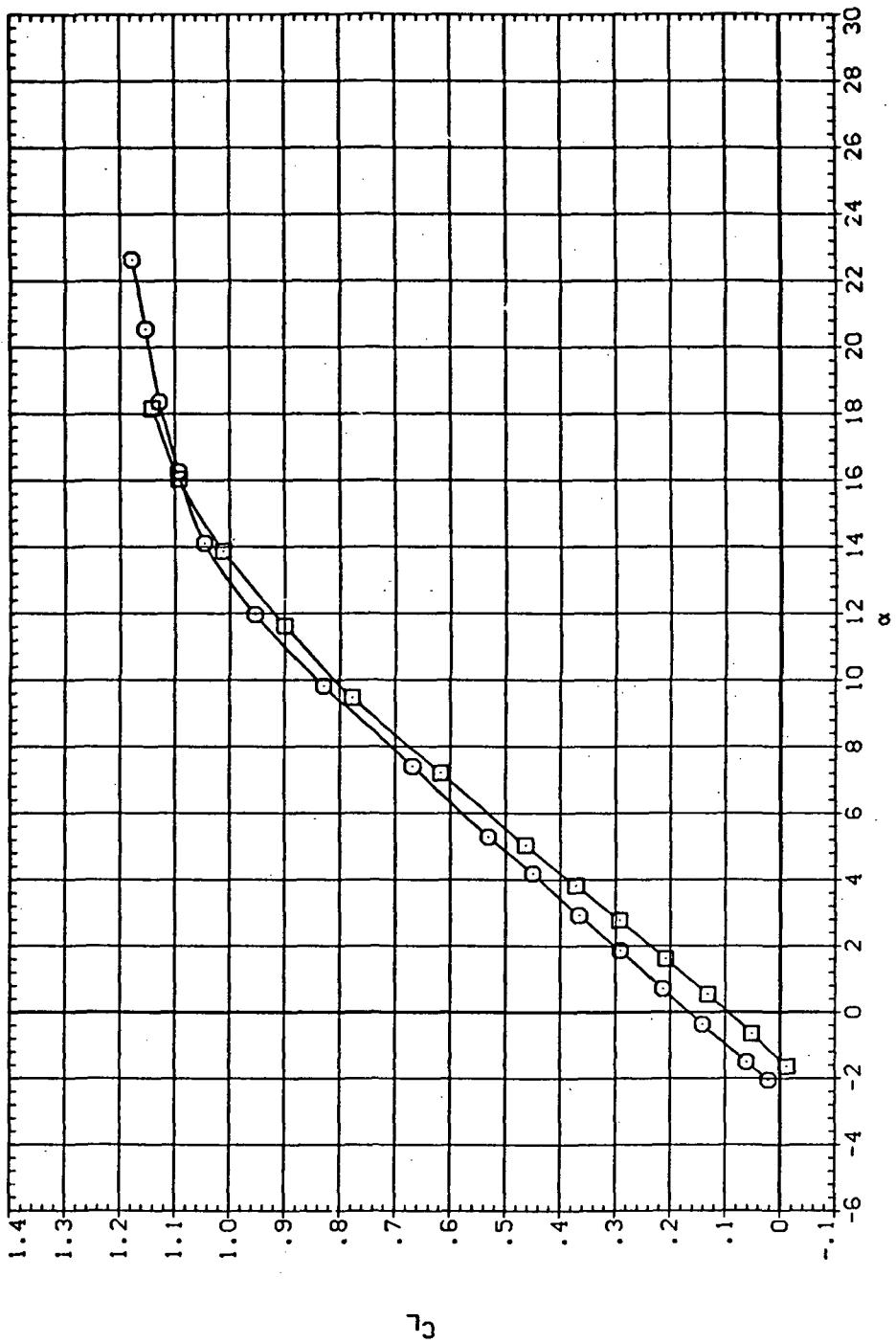
RN/L  
 8,200  
 8,200  
 8,200



(e)  $C_Y$ ,  $C_n$ , and  $C_i$  vs  $C_L$

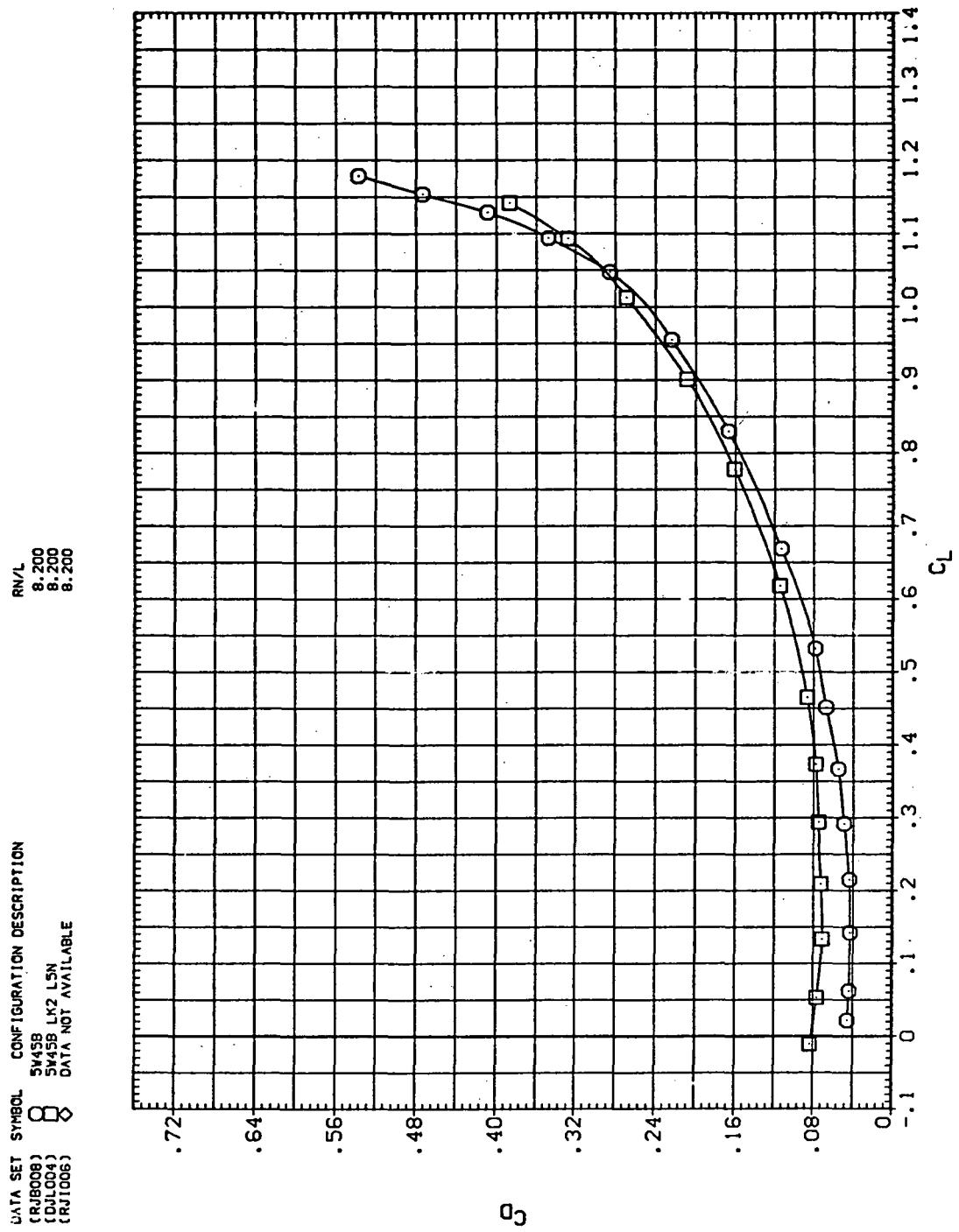
Figure 10.—Concluded.

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (CRUB008) ○ SW58 SW458 LK2 L5N  
 (CUL004) □ SW458 LK2 L5N  
 (CRJ1006) Δ DATA NOT AVAILABLE



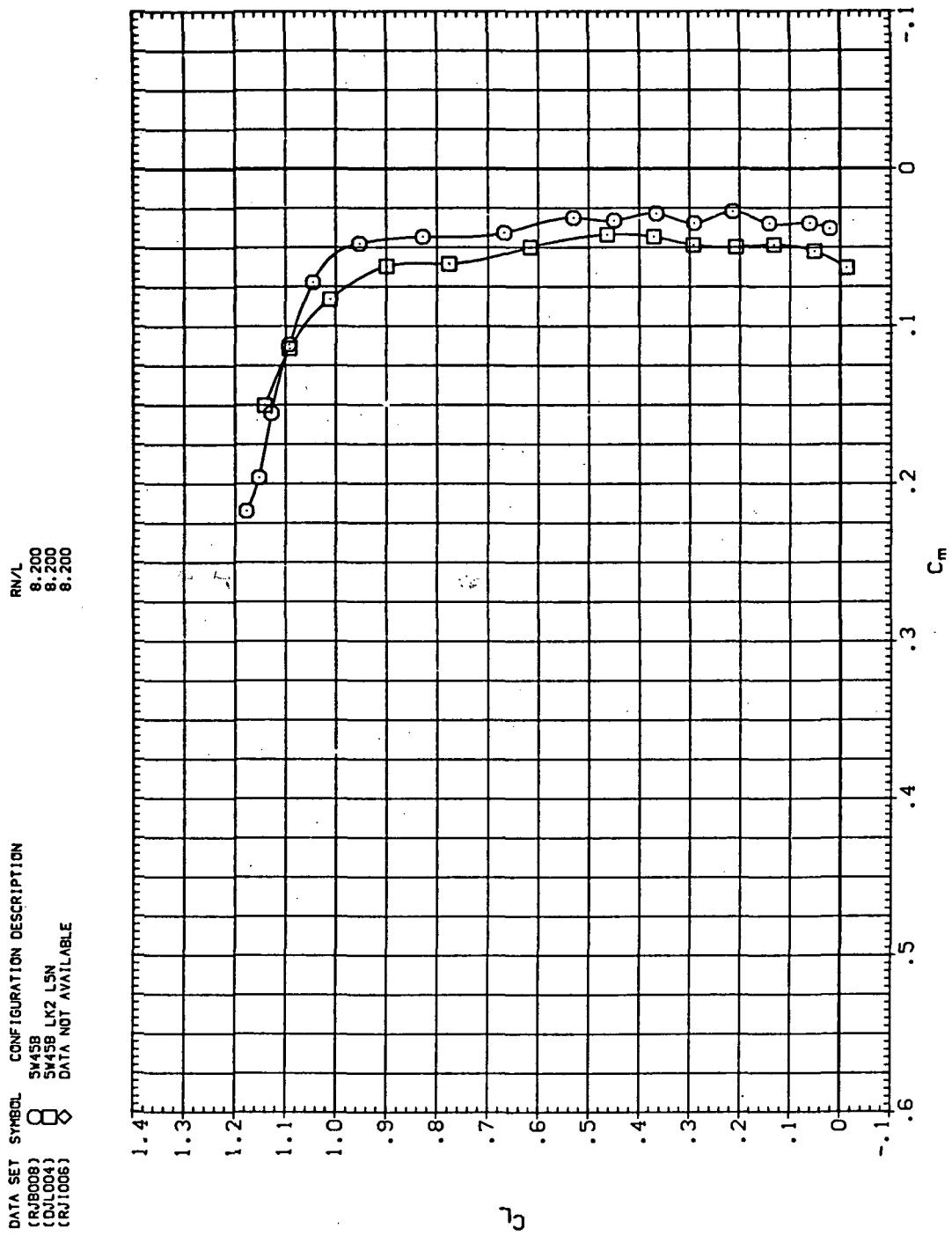
(a)  $C_L$  vs  $\alpha$

Figure 11.—Effect of Krüger nose flaps mounted on the drooped-nose flaps deflected  $5^\circ$ , downstream panel only:  $\Lambda = 45^\circ, M = 1.1$ .



(b)  $C_D$  vs  $C_L$

Figure 11.— Continued.



(c)  $C_L$  vs  $C_m$

Figure 11.—Continued.

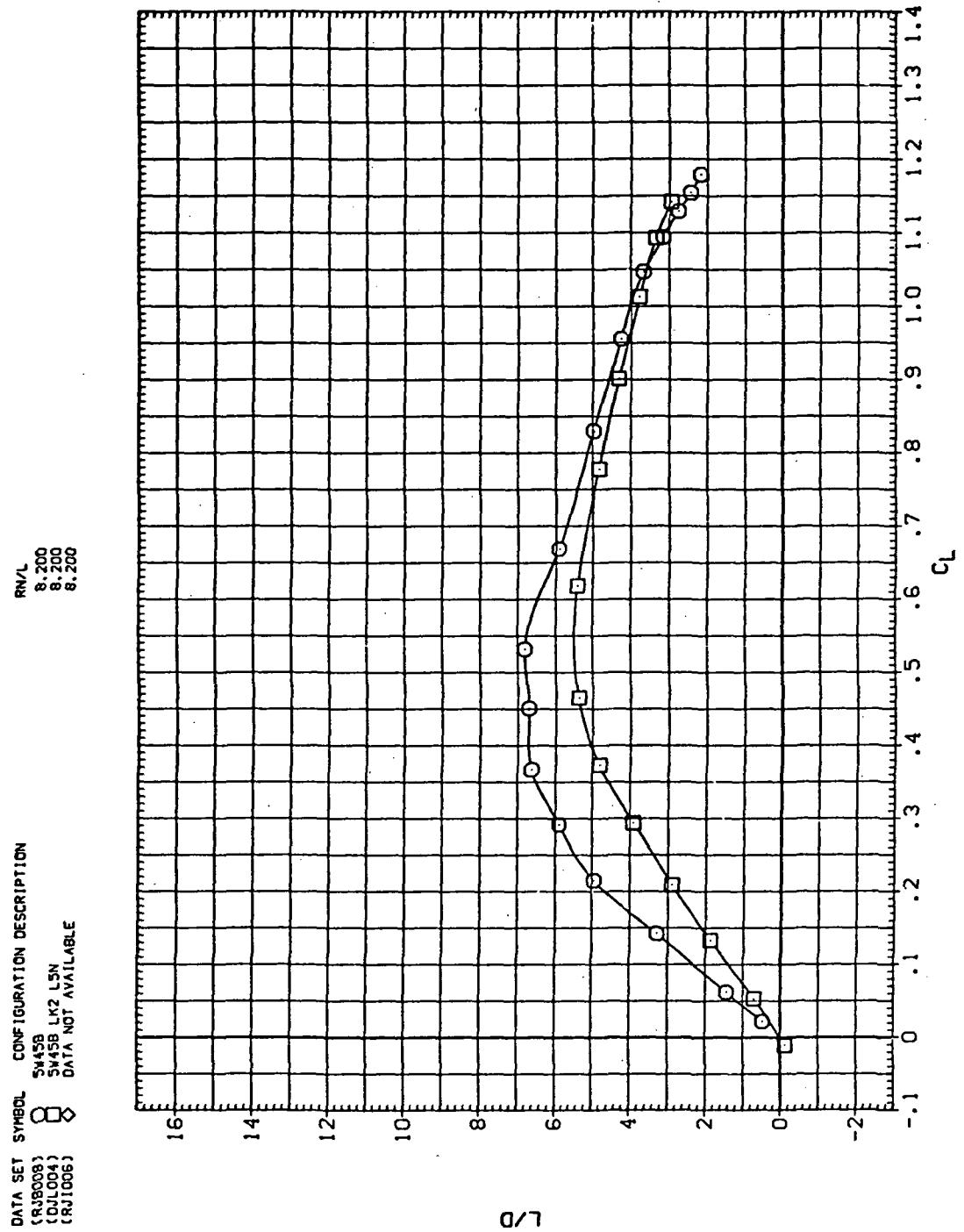
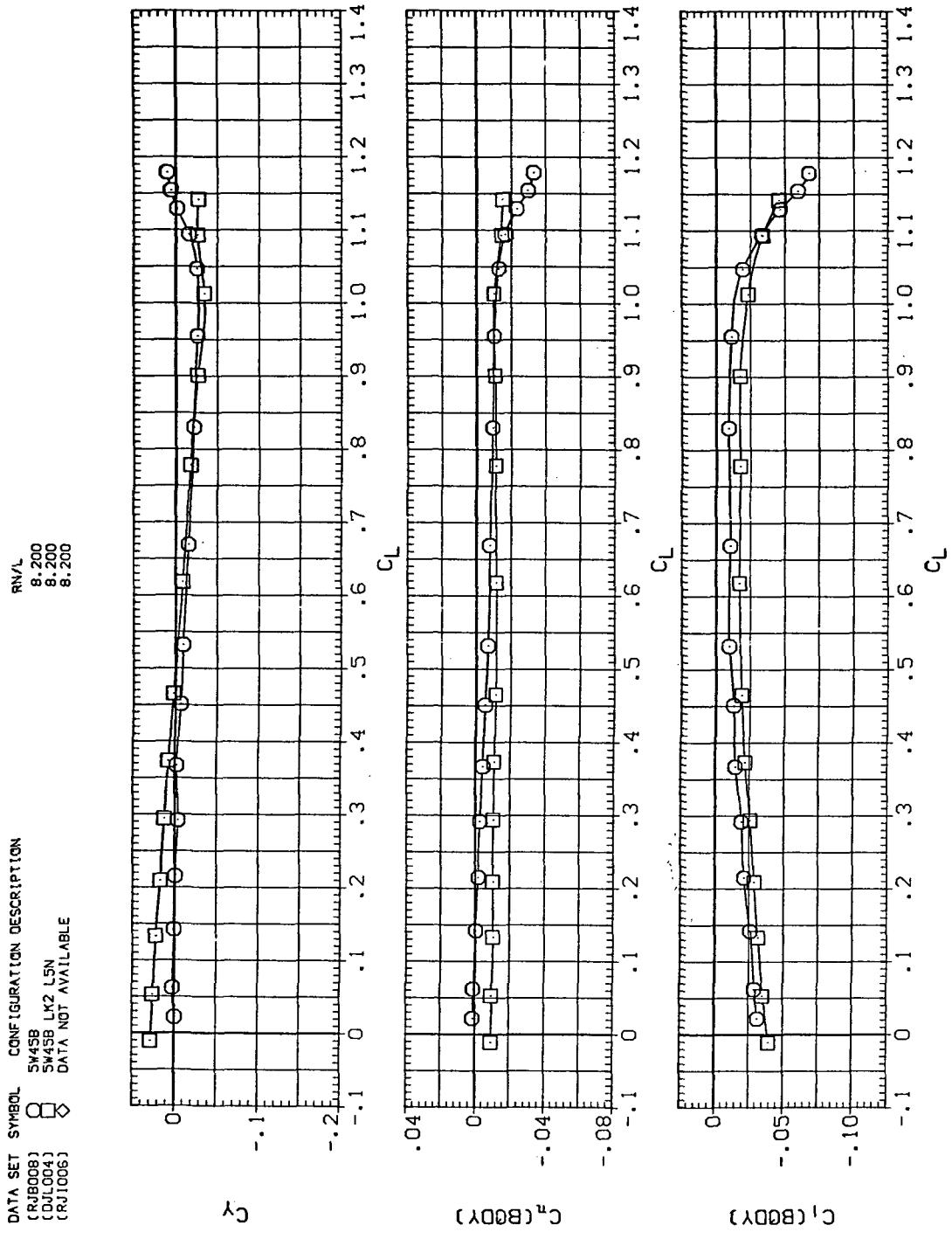


Figure 11.—Continued.



(e)  $C_n$ ,  $C_Y$ , and  $C_J$  vs  $C_L$

Figure 11.—Concluded.

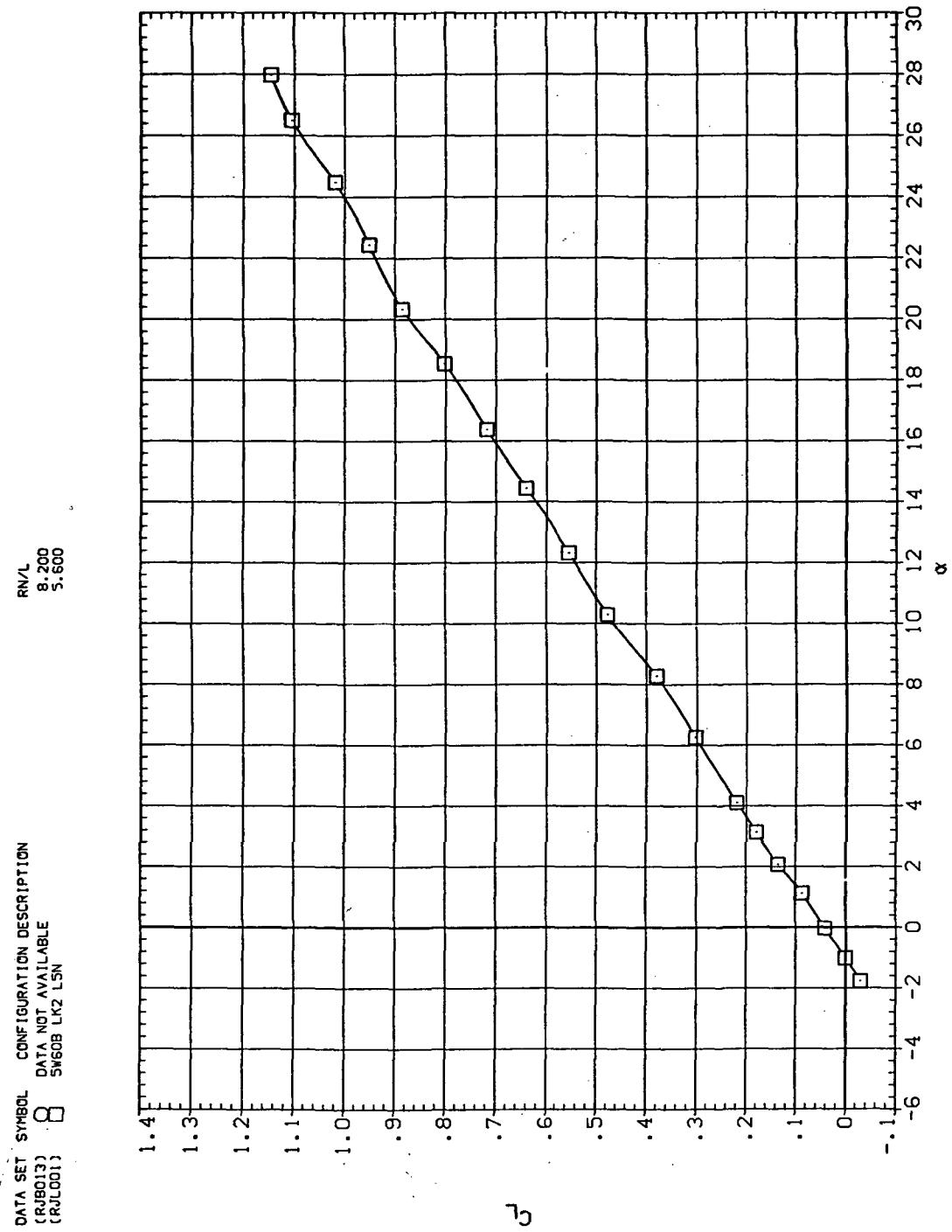
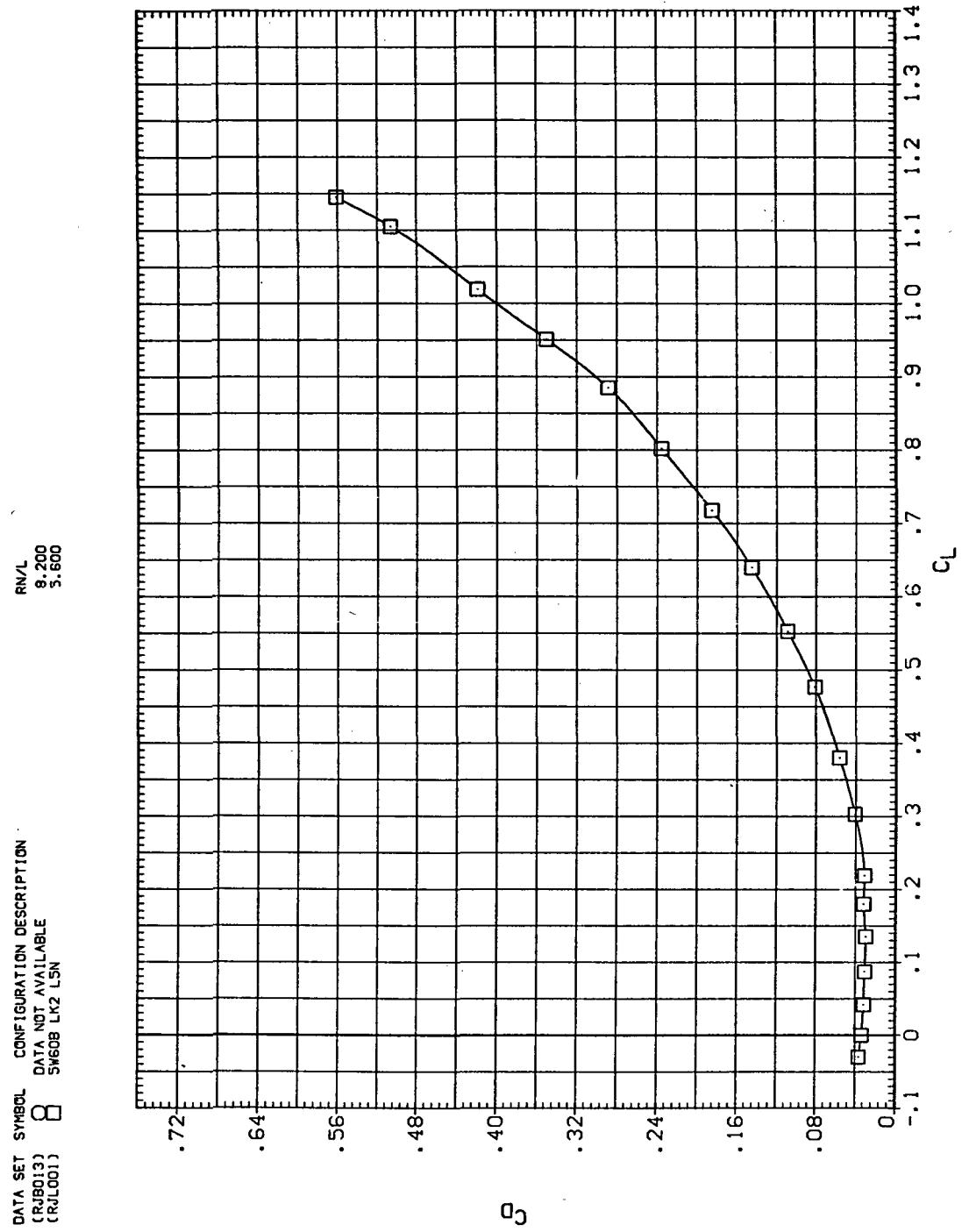


Figure 12.— Effect of Krüger nose flaps mounted on the drooped-nose flaps deflected  $5^\circ$ , downstream panel only:  $\Lambda = 60^\circ$ ,  $M = 0.25$ .



(b)  $C_D$  vs  $C_L$

Figure 12.—Continued.

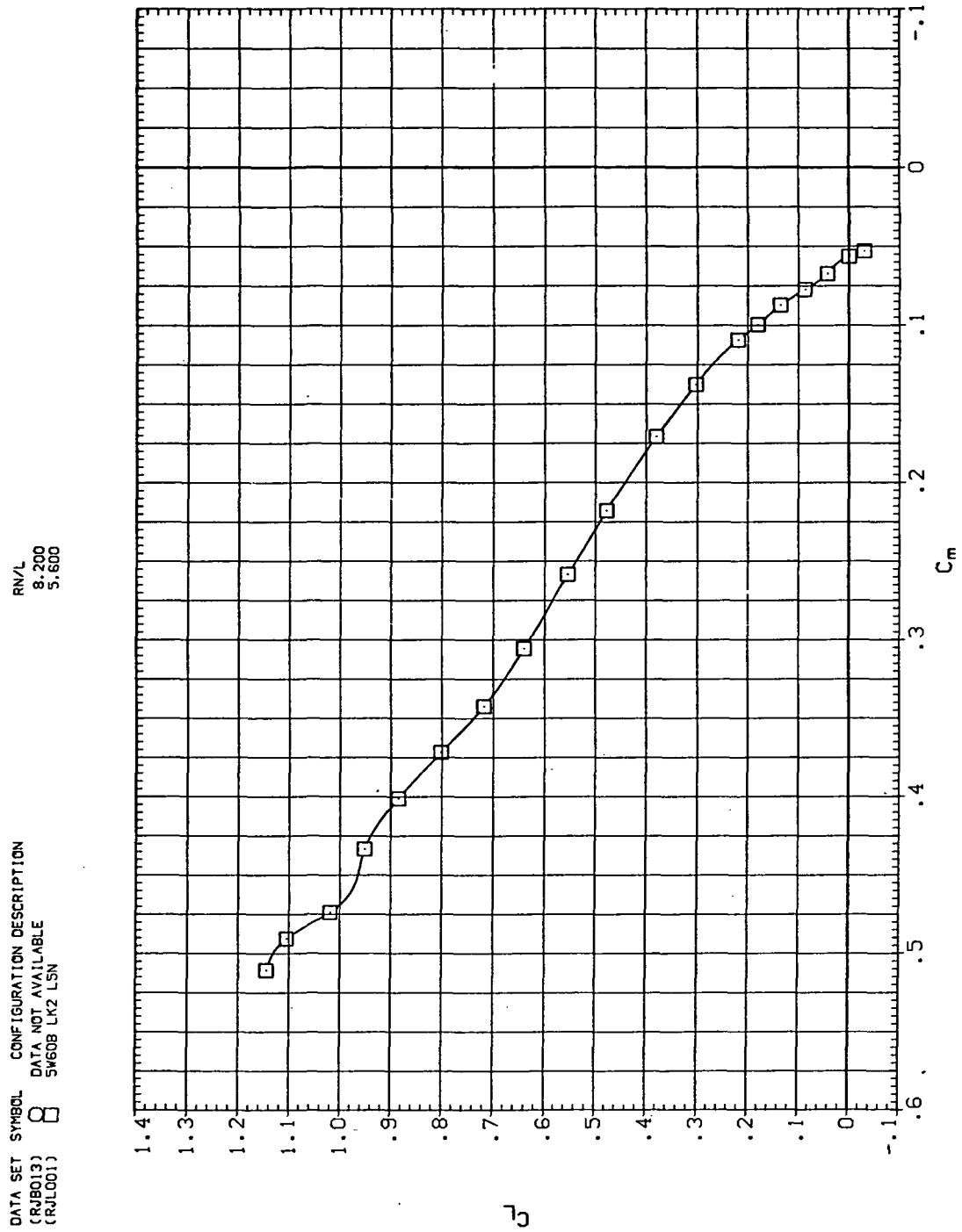
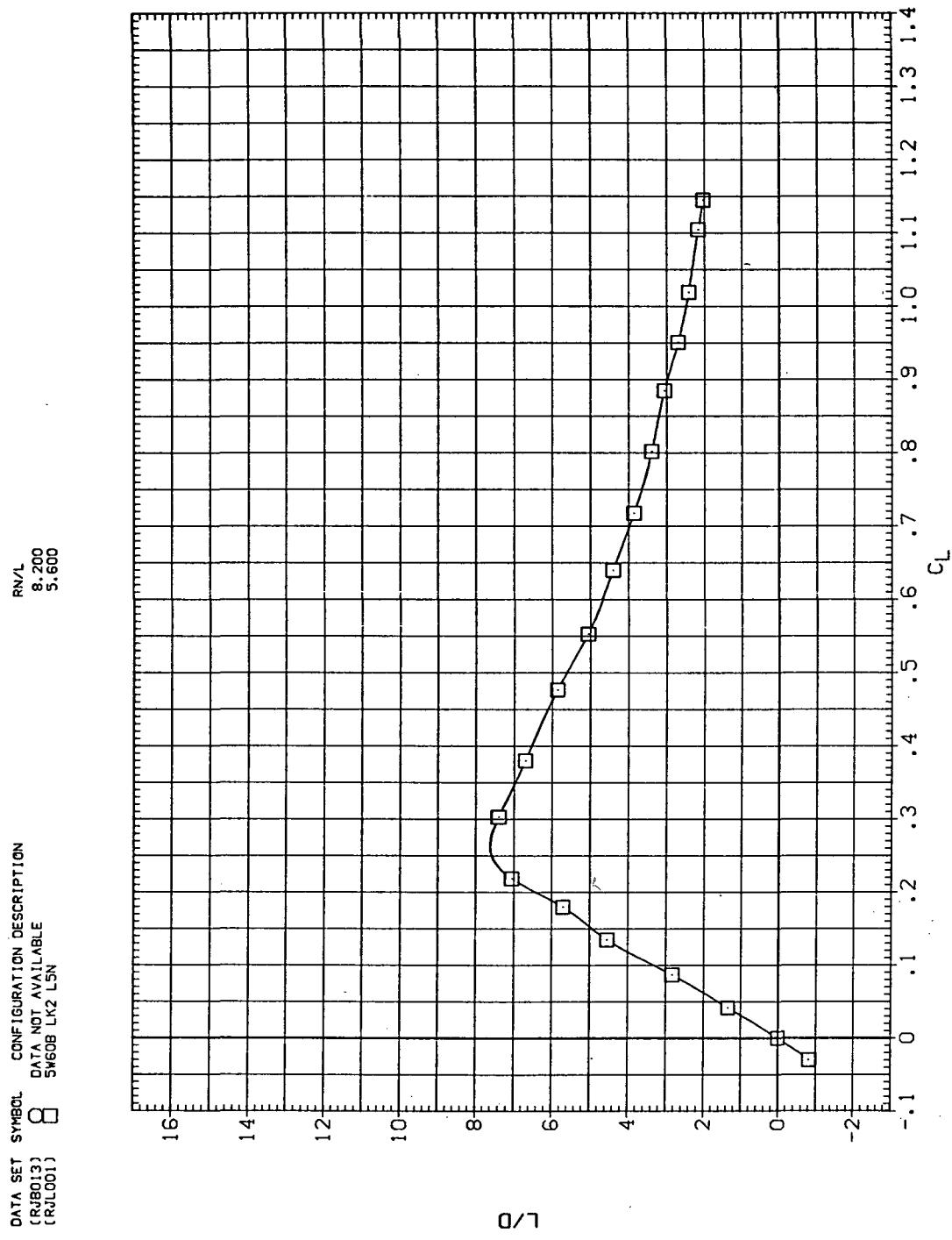


Figure 12.—Continued.

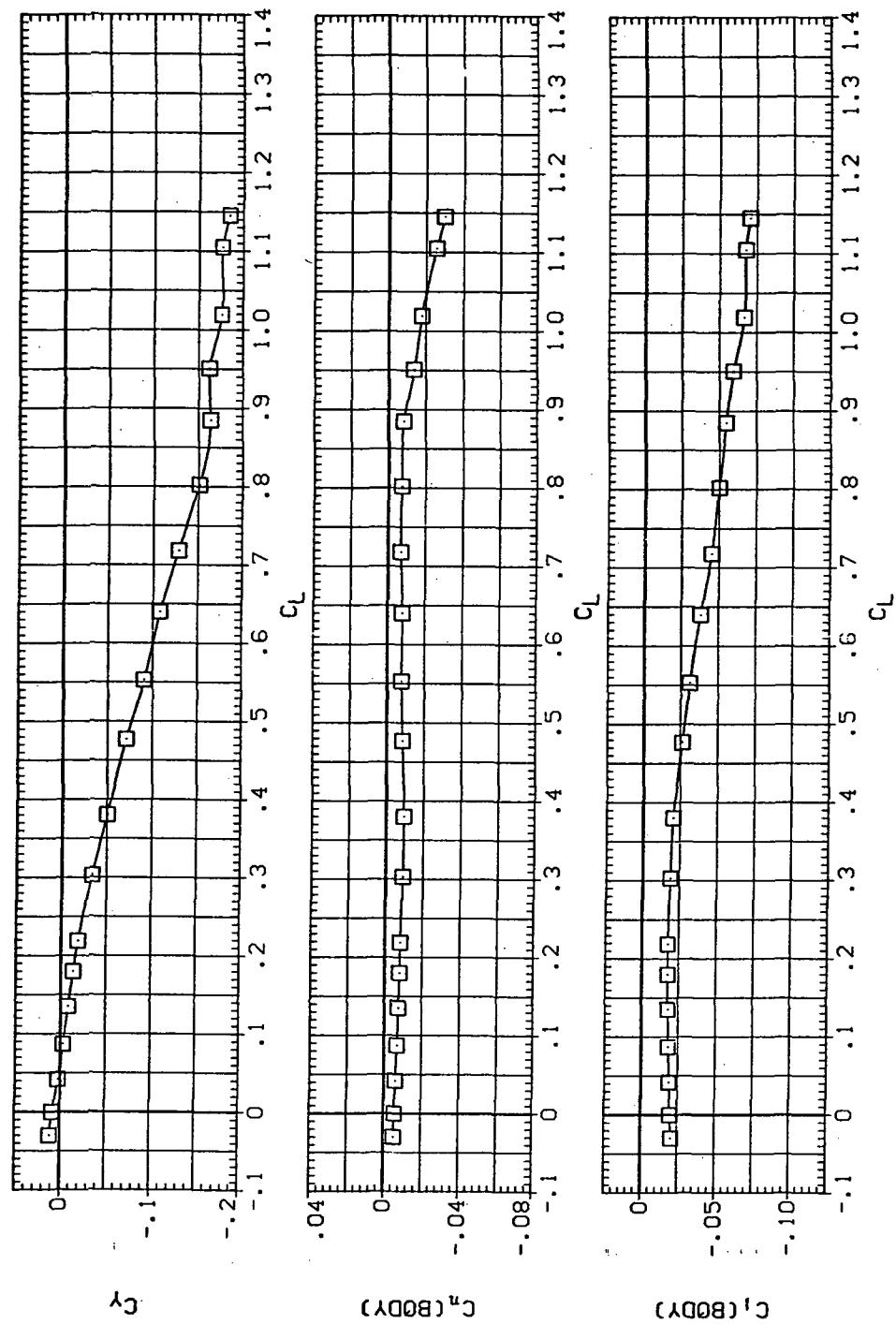


(d)  $L/D$  vs  $C_L$

Figure 12.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (CRUB013) 8 DATA NOT AVAILABLE  
 (CRUL001) SN60B LK2 LSN

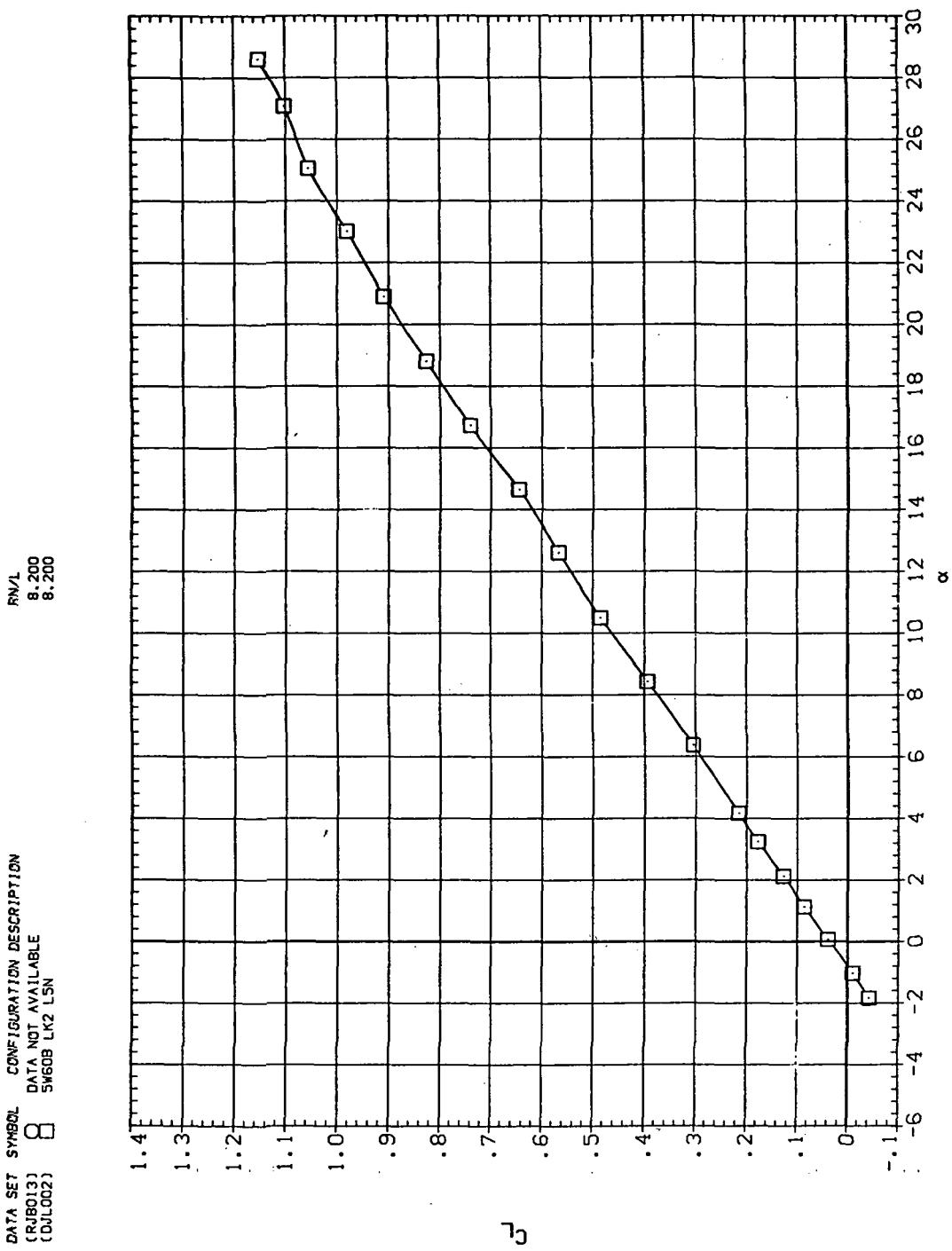
RN/L  
 8.200  
 5.600



(e)  $C_Y$ ,  $C_n$ , and  $C_i$  vs  $C_L$

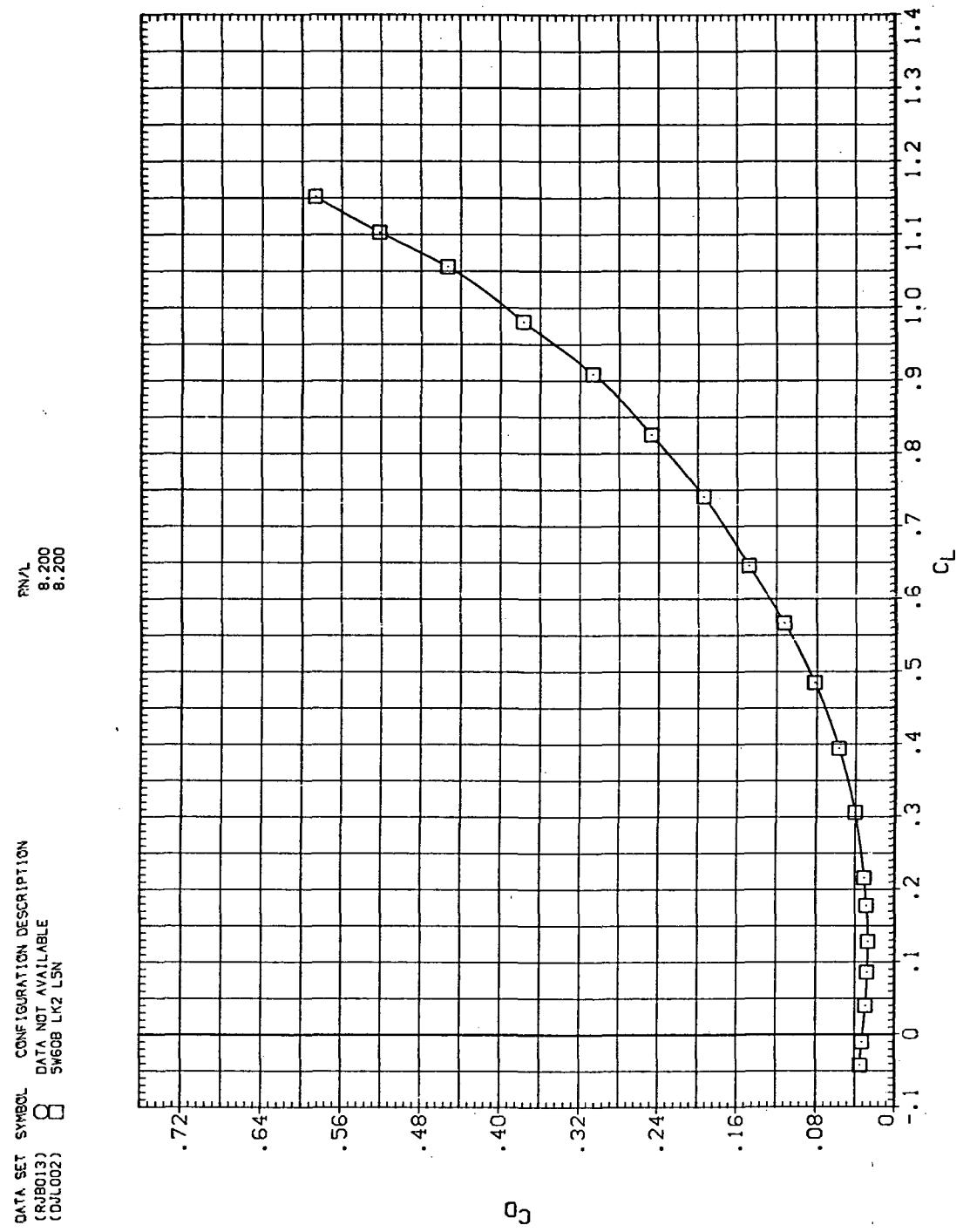
Figure 12.—Concluded.

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (RBO13) DATA NOT AVAILABLE  
 (DJL002) SW60B LK2 LSN



(a)  $C_L$  vs  $\alpha$

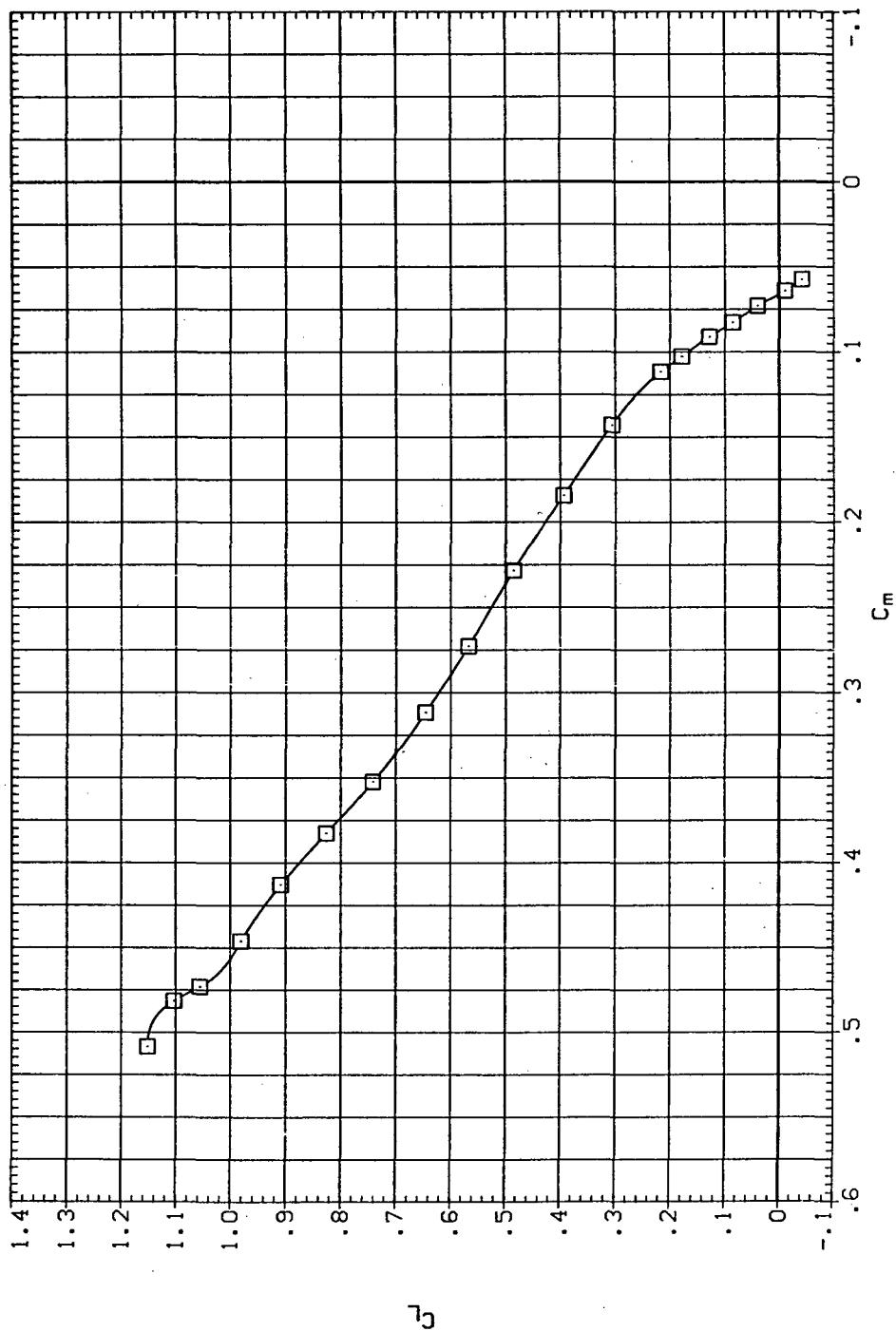
Figure 13.— Effect of Krüger nose flaps mounted on the drooped-nose flaps deflected  $5^\circ$ , downstream panel only:  $\Lambda = 60^\circ, M = 0.40$ .



(b)  $C_D$  vs  $C_L$

Figure 13.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (RJB013) DATA NOT AVAILABLE  
 (DJLC02) SW608 LR2 LSN



(c)  $C_L$  vs  $C_m$

Figure 13.—Continued.

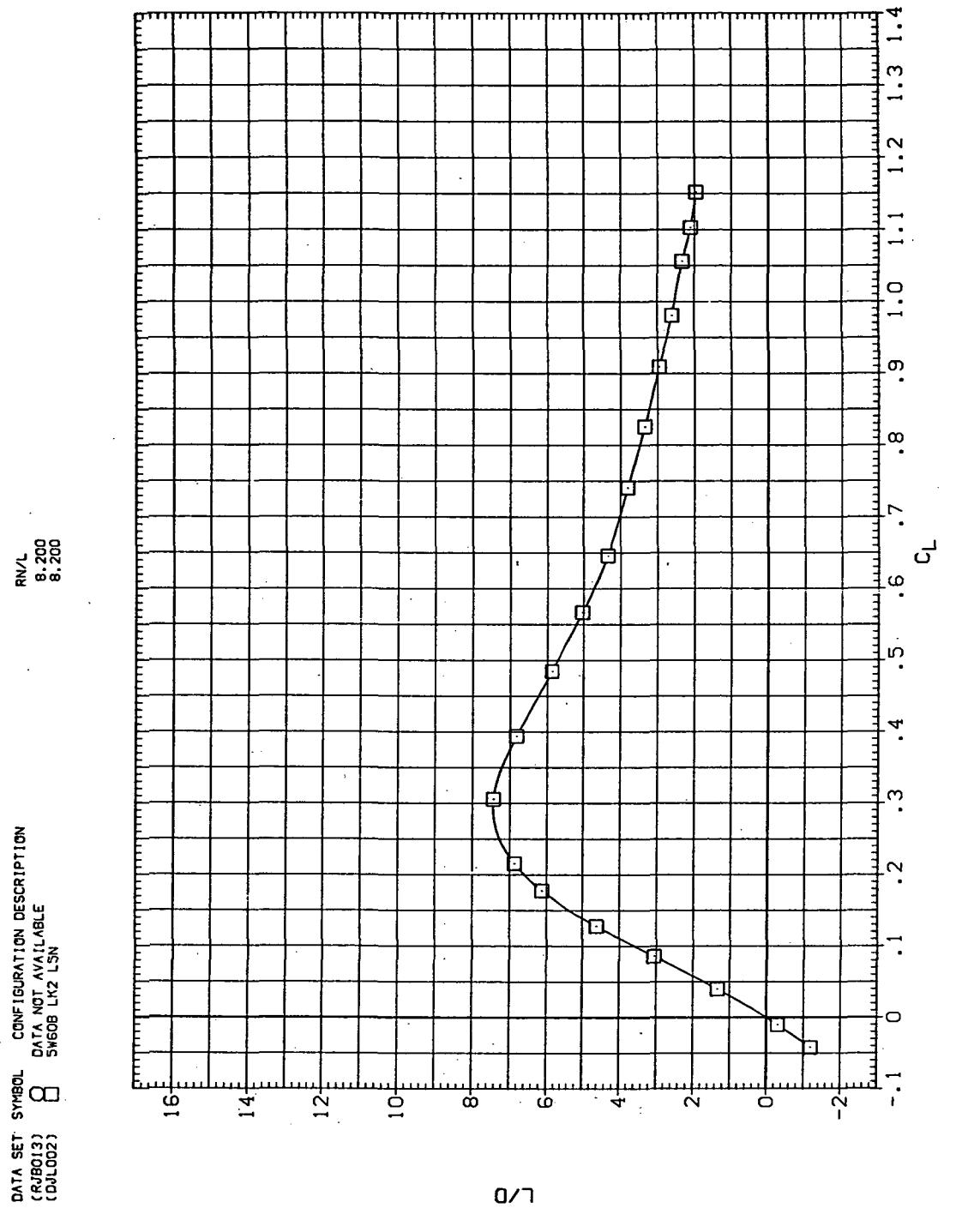
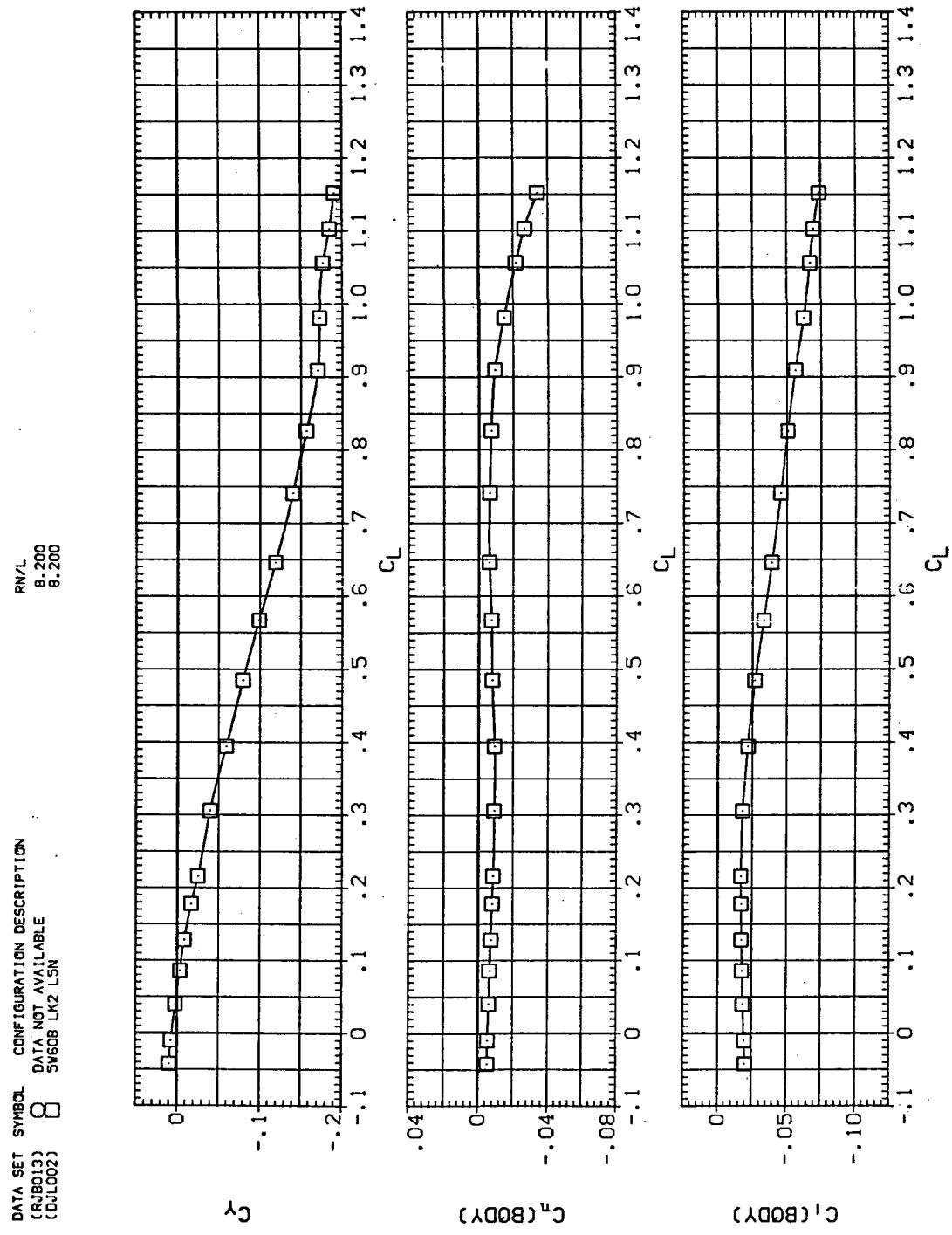


Figure 13.—Continued.



(e)  $C_Y$ ,  $C_n$  and  $C_i$  vs  $C_L$

Figure 13.— Concluded.

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (RIB013)  $\square$  SW608  
 (RUL002)  $\circ$  SW608 LK2 L5N

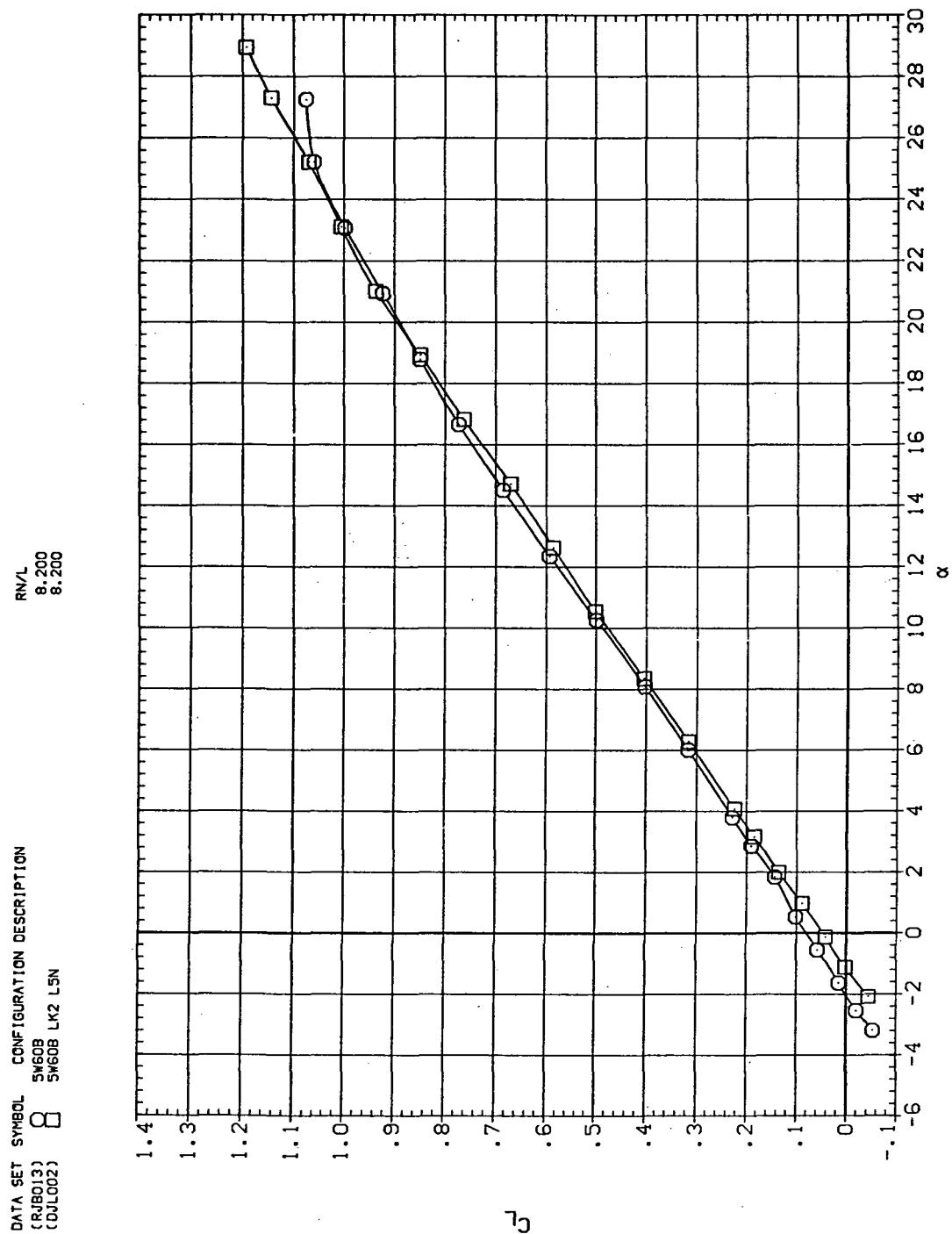
(a)  $C_L$  vs  $\alpha$ 

Figure 14.— Effect of Krüger nose flaps mounted on the drooped-nose flaps deflected  $5^\circ$ , downstream panel only:  $\Lambda = 60^\circ, M = 0.60$ .

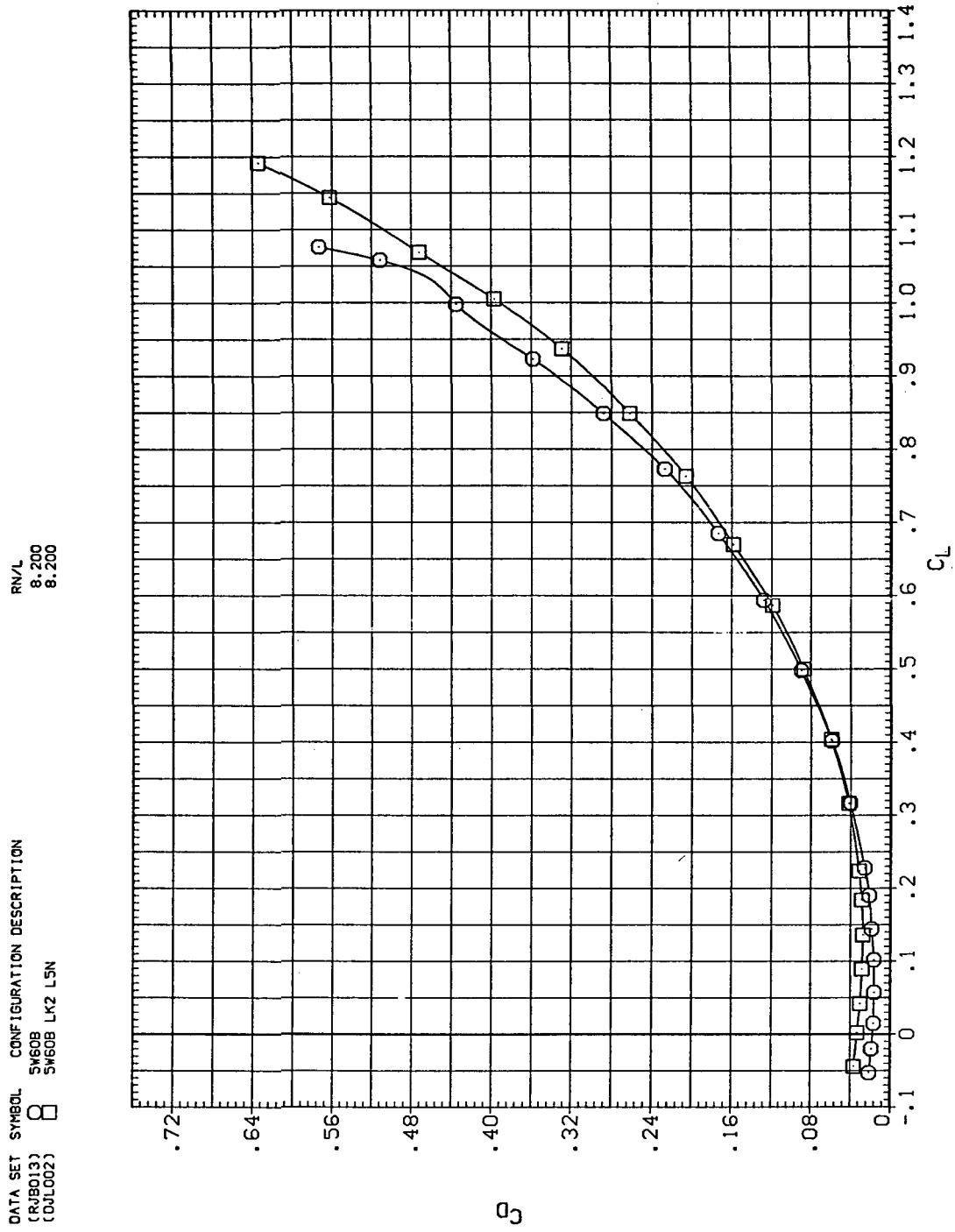
(b)  $C_D$  vs  $C_L$ 

Figure 14.—Continued.

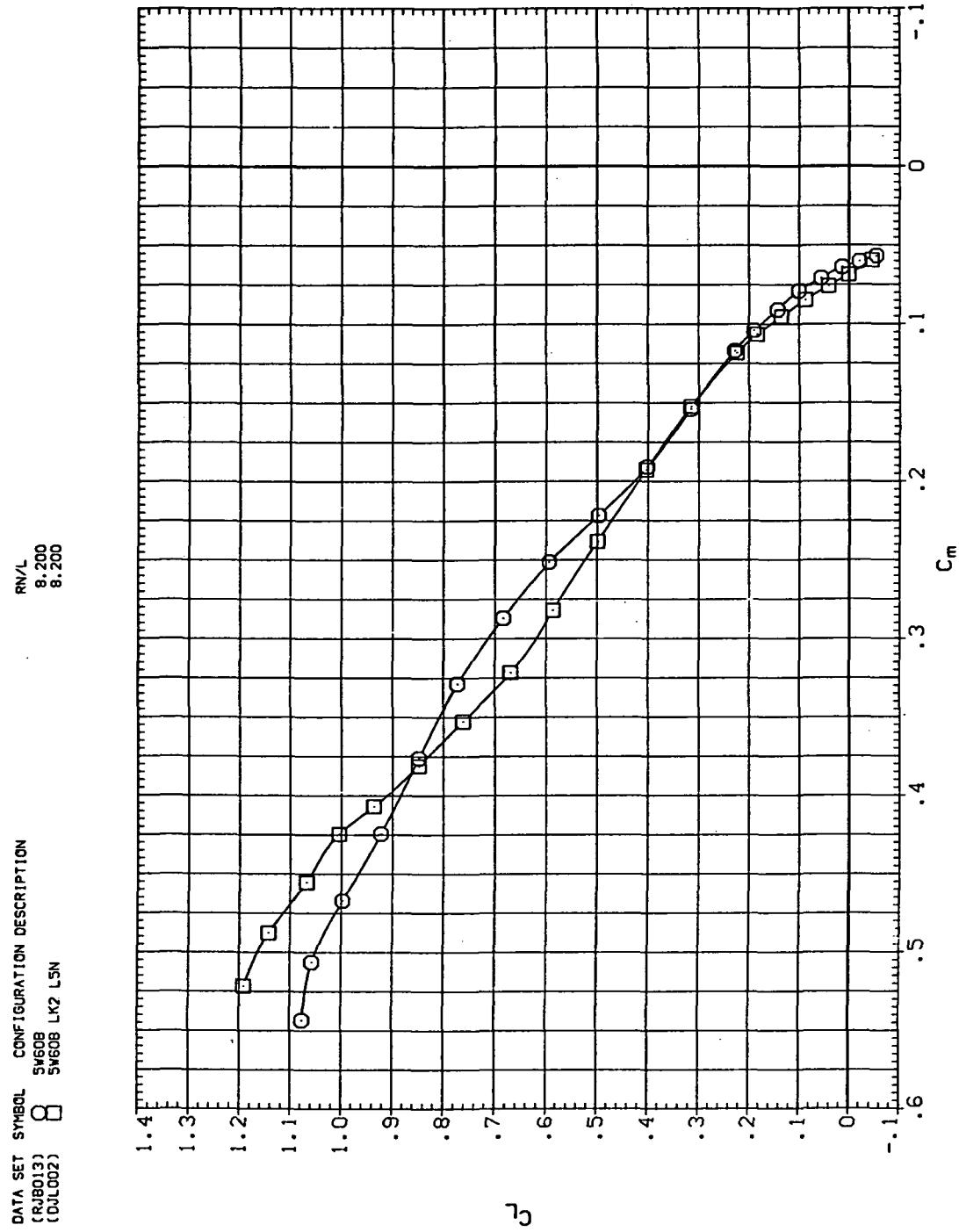
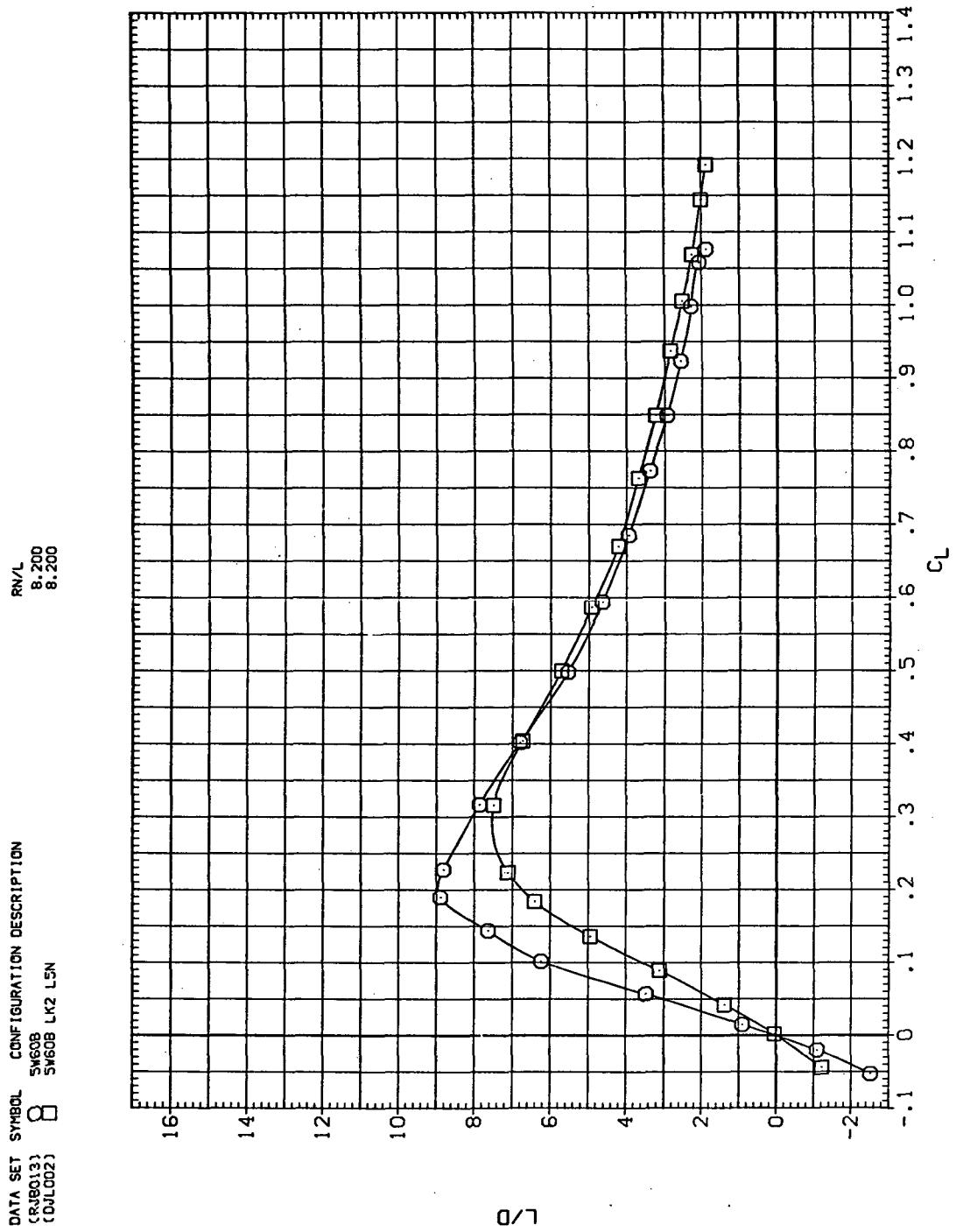


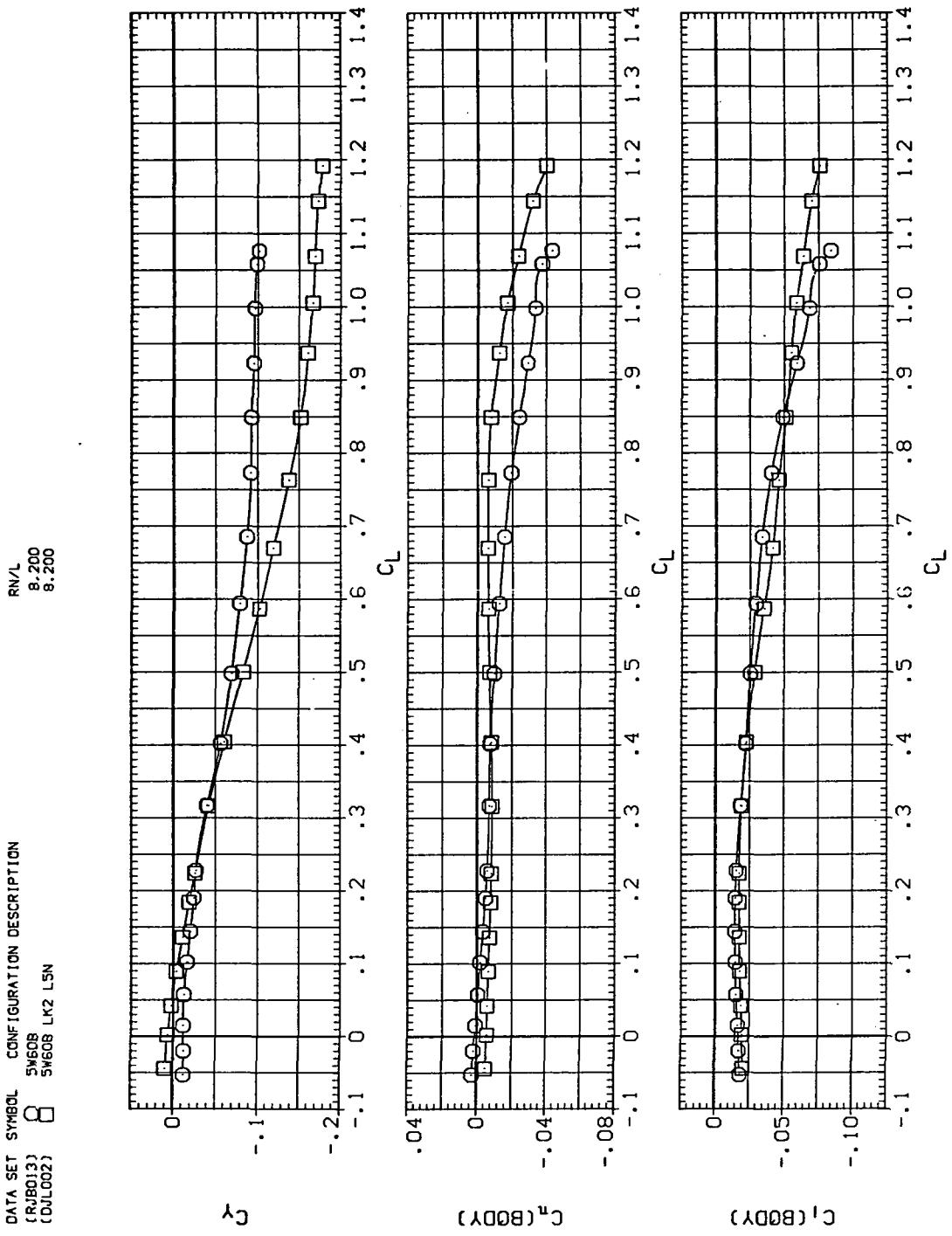
Figure 14.— Continued.



(d)  $L/D$  vs  $C_L$

Figure 14.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (RUB013) SWE08 SWEB LK2 LSN  
 (DJL002) SWE08 SWEB



(e)  $C_Y$ ,  $C_n$ , and  $C_i$  vs  $C_L$

Figure 14.— Concluded.

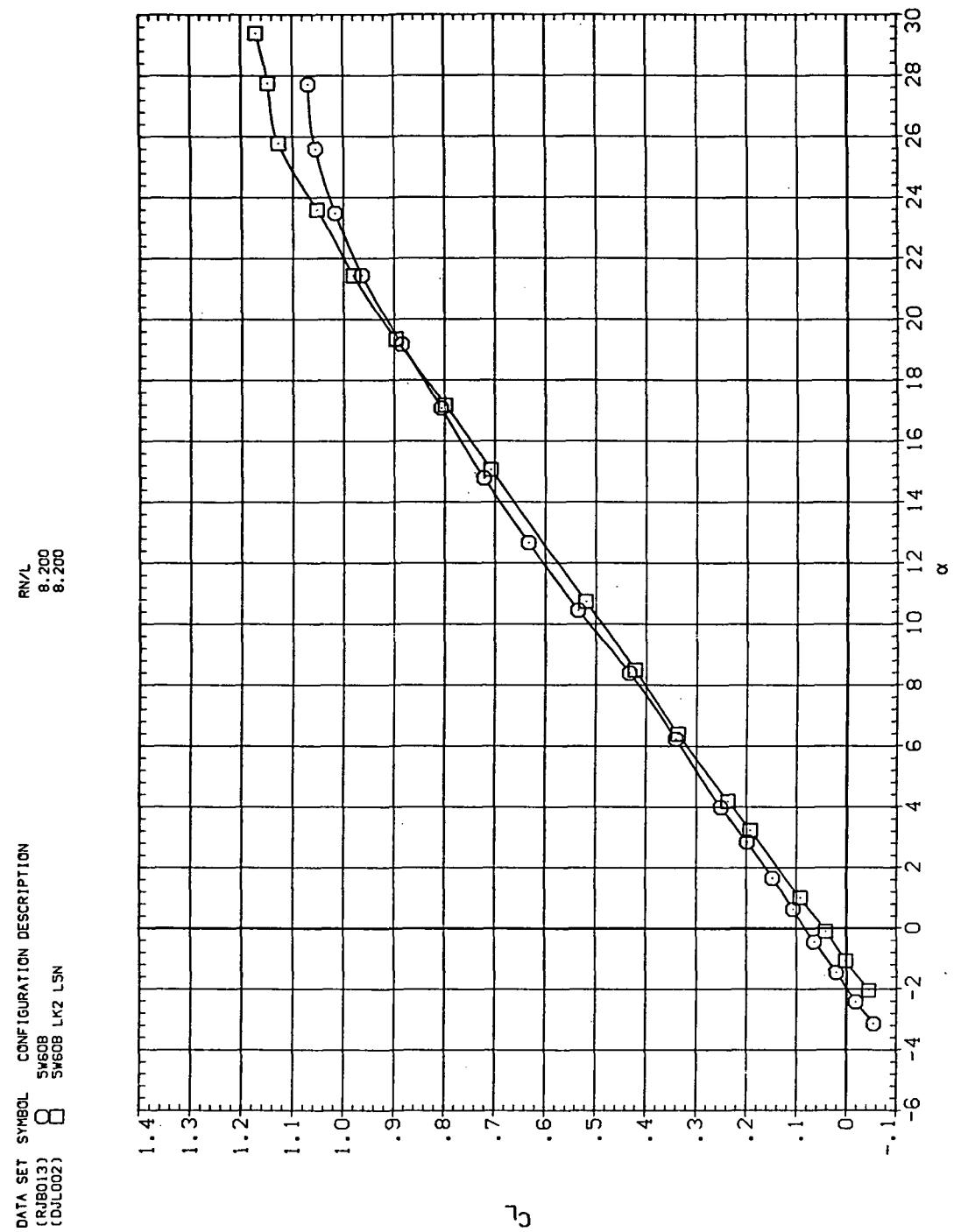
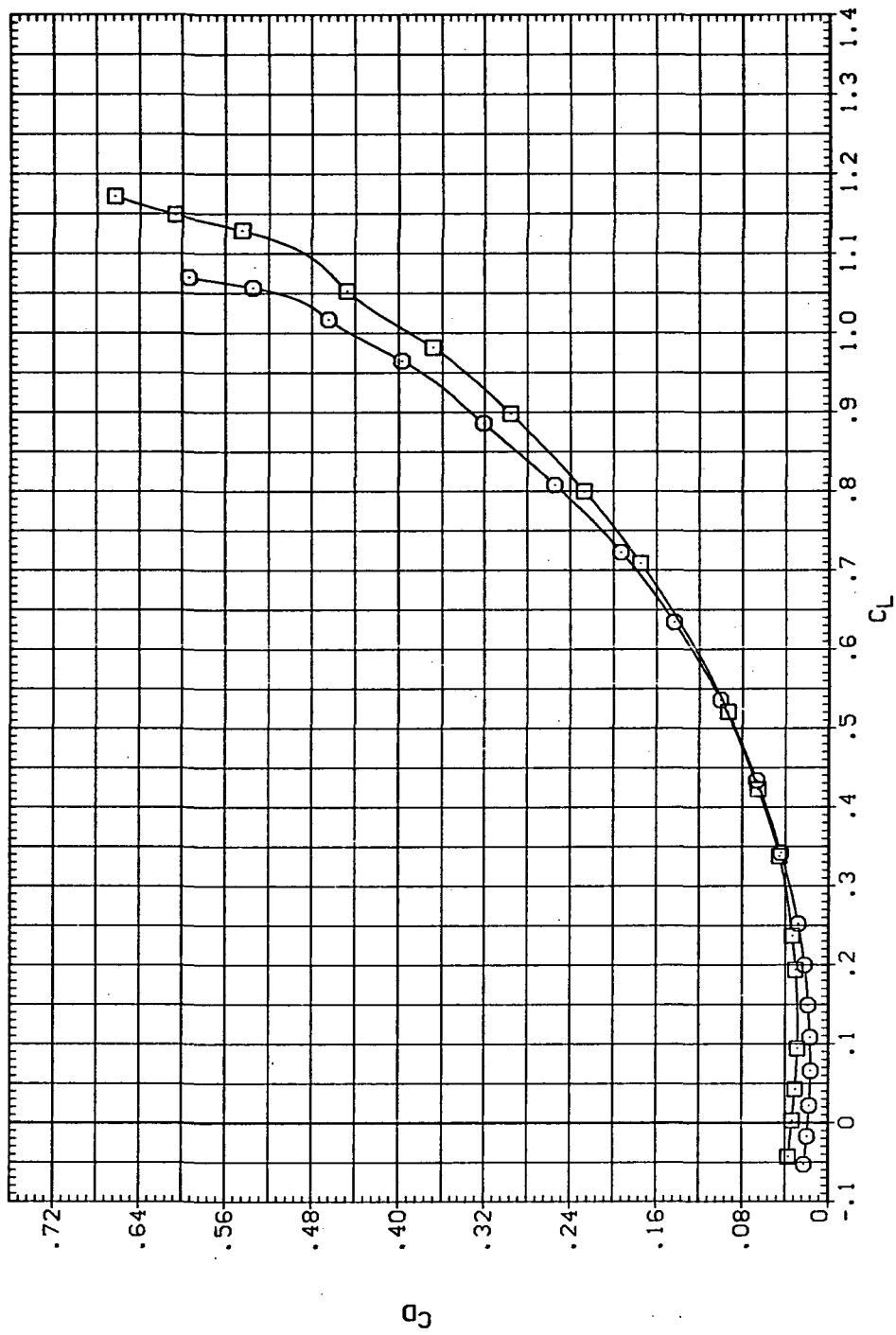
(a)  $C_L$  vs  $\alpha$ 

Figure 15.— Effect of Kriger nose flaps mounted on the drooped-nose flaps deflected  $5^\circ$ , downstream panel only:  $\Lambda = 60^\circ, M = 0.80$ .

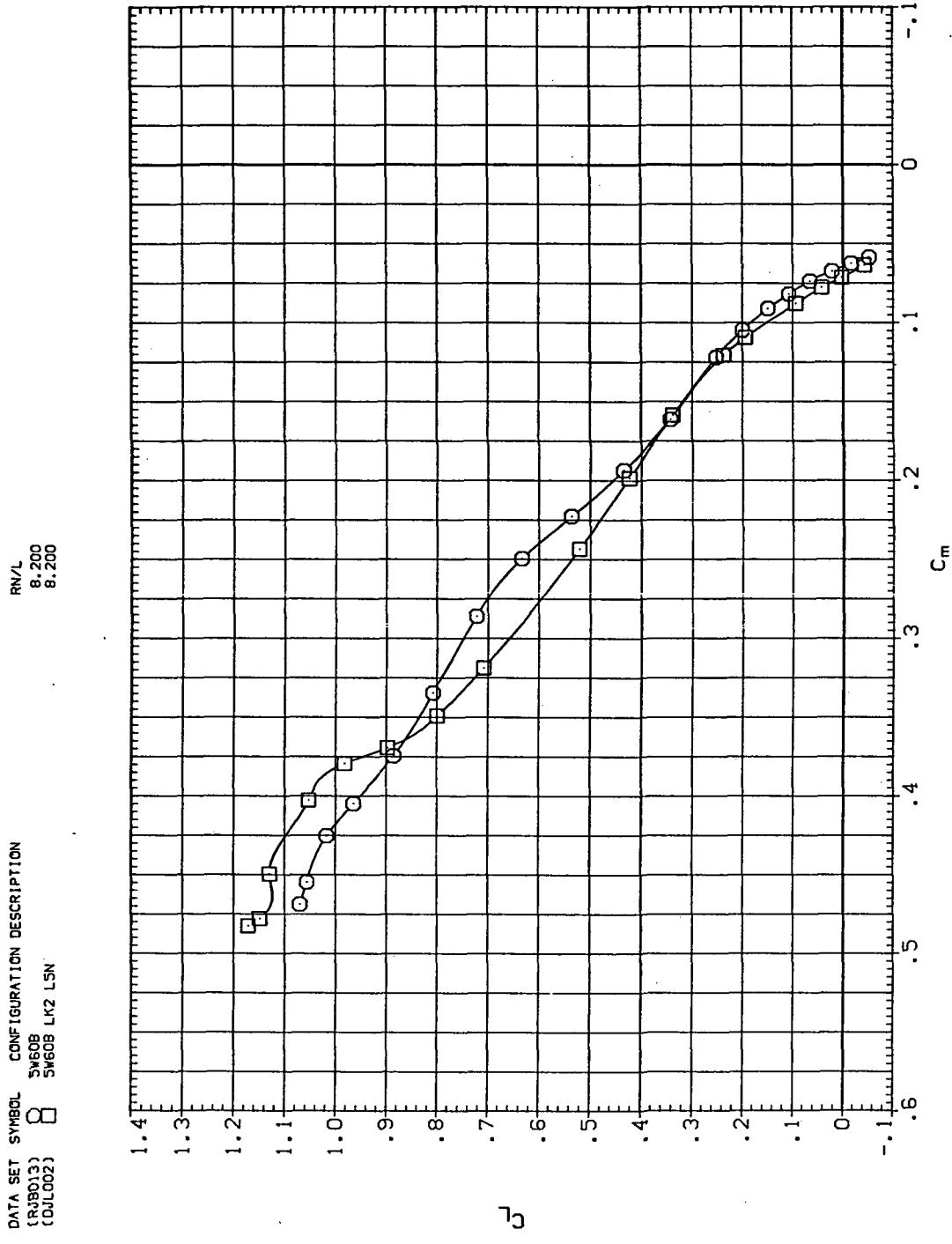
DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (NJB013)  $\square$  SW608  
 (CDL002)  $\circ$  SW608 LK2 L5N

R/V/L  
 8.200  
 8.200



(b)  $C_D$  vs  $C_L$

Figure 15.— Continued.



(c)  $C_L$  vs  $C_m$

Figure 15.—Continued.

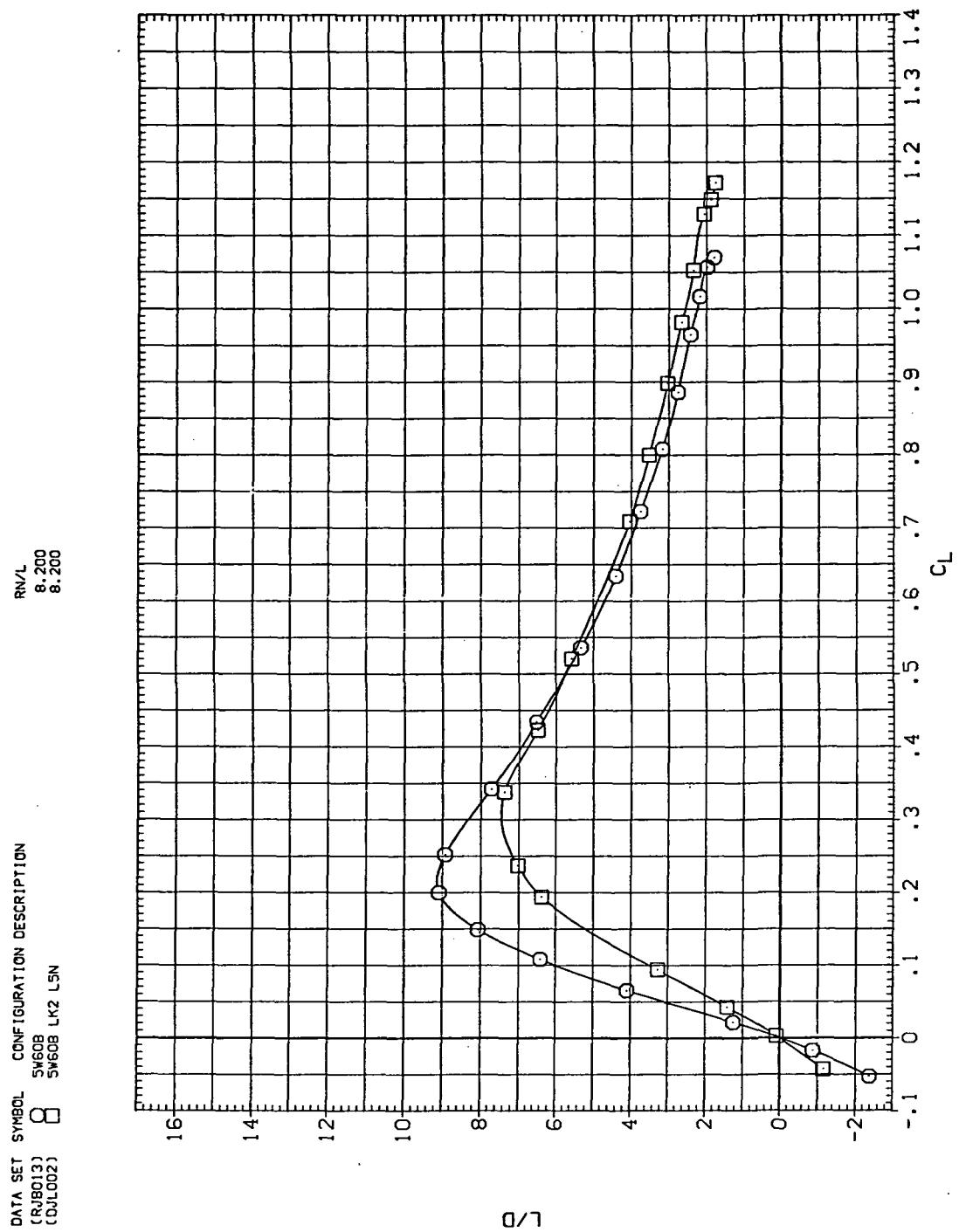
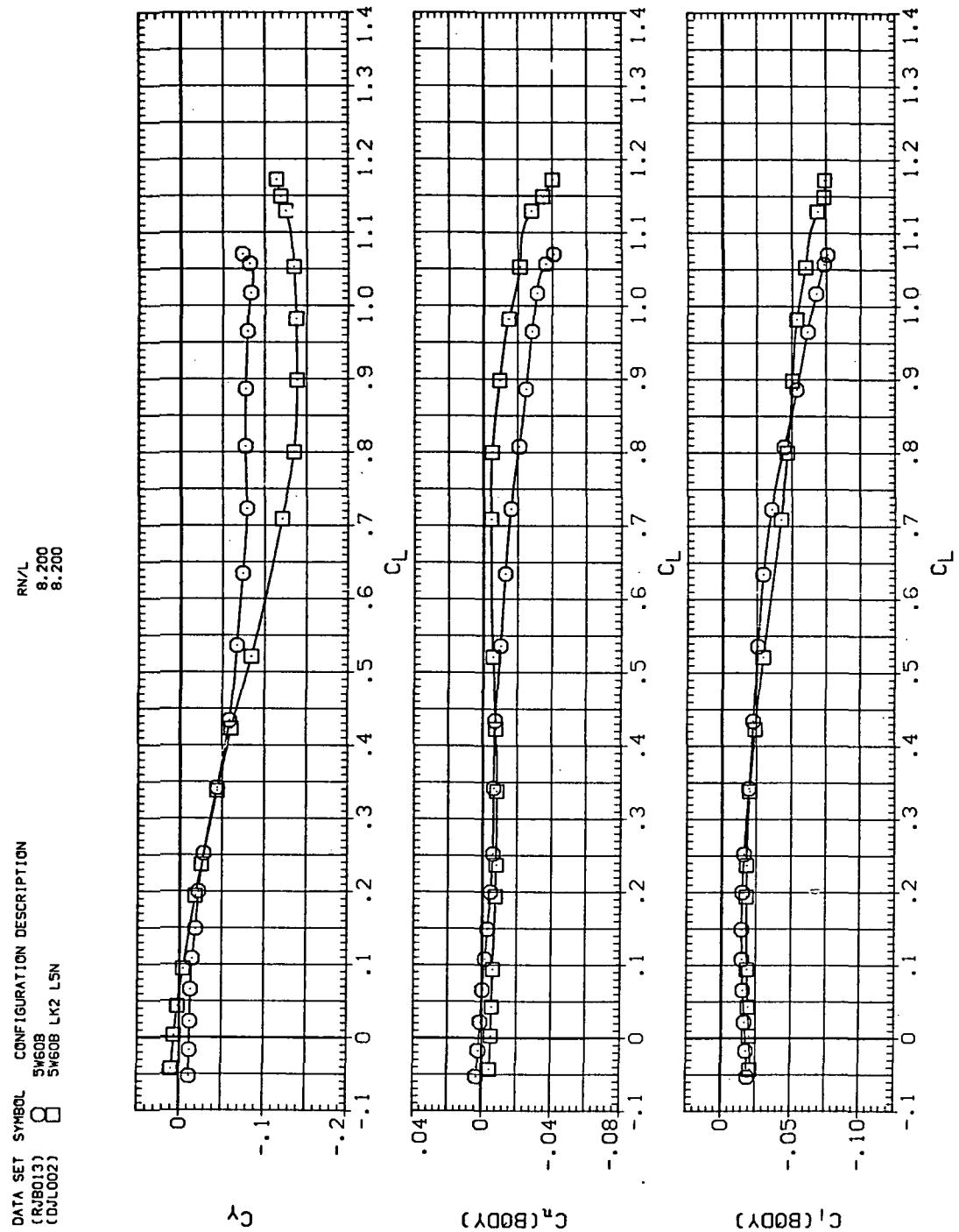
(d)  $L/D$  vs  $C_L$ 

Figure 15.—Continued.



(e)  $C_Y$ ,  $C_n$ , and  $C_i$  vs  $C_L$

Figure 15.— Concluded.

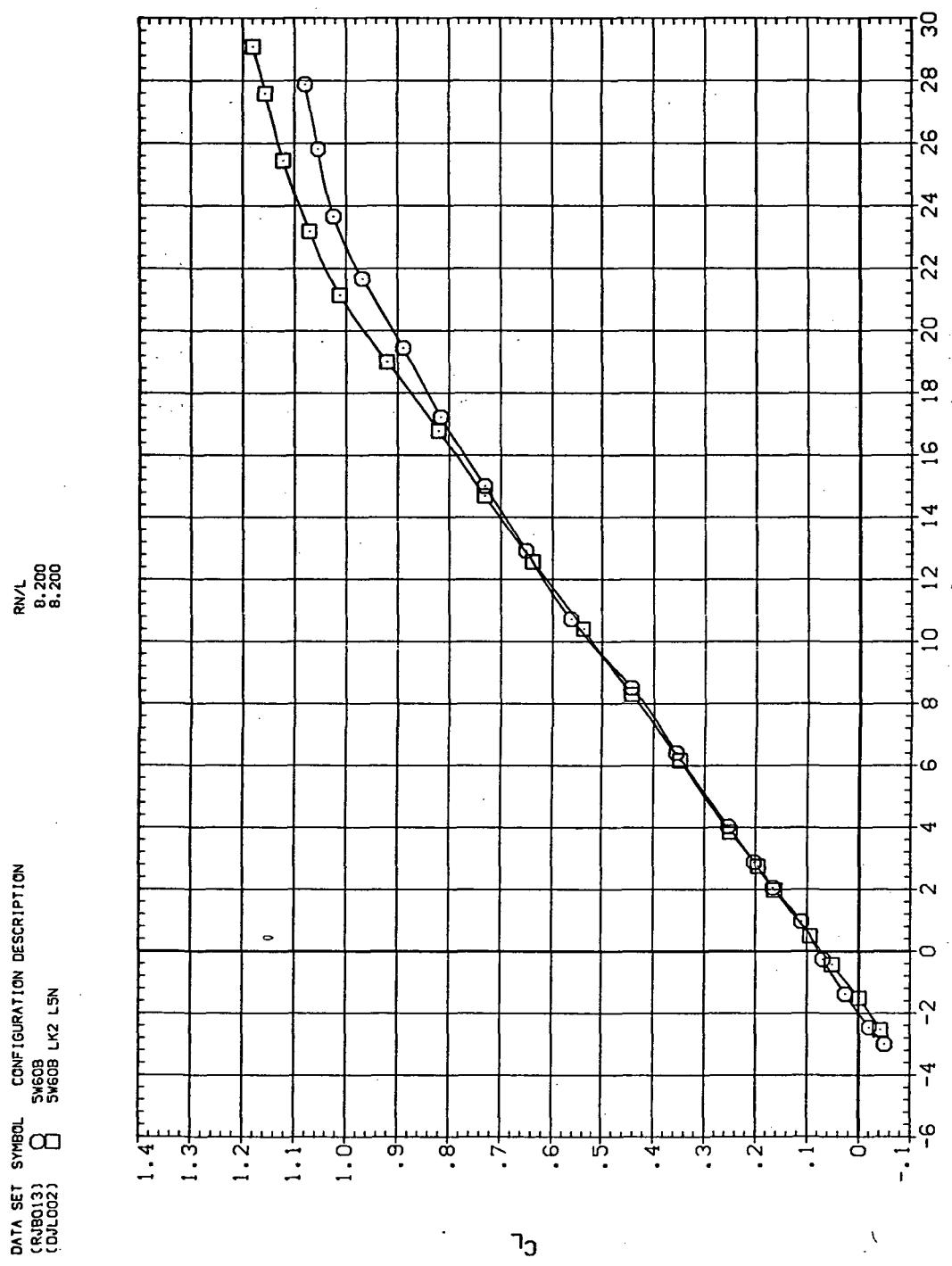
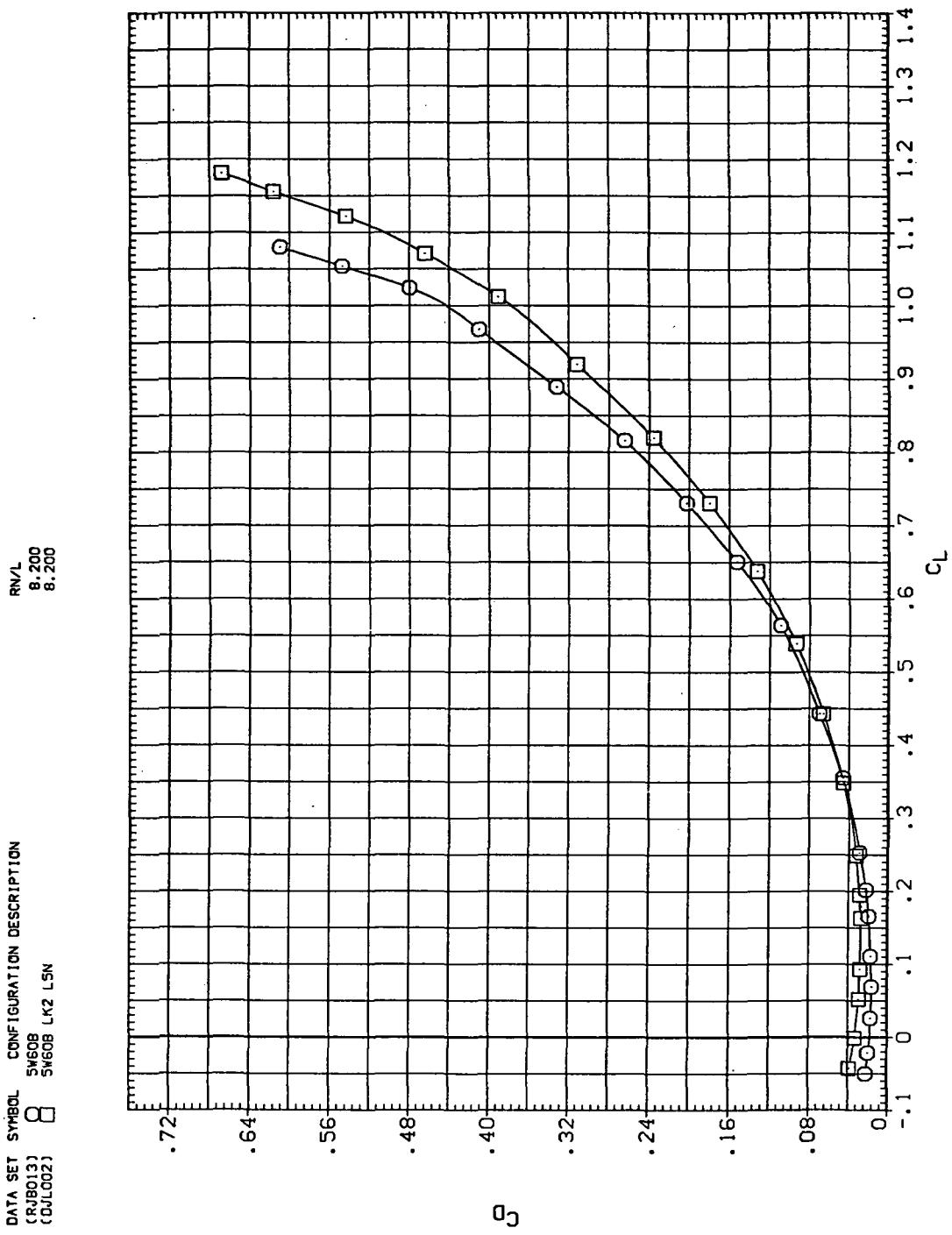
(a)  $C_L$  vs  $\alpha$ 

Figure 16.— Effect of Krüger nose flaps mounted on the drooped-nose flaps deflected  $5^\circ$ , downstream panel only:  $\Lambda = 60^\circ$ ,  $M = 0.90$ .

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 CRJ013) O SW608 SW608 LK2 LSN  
 CQJL002) □ SW608 SW608 LK2 LSN



(b)  $C_D$  vs  $C_L$

Figure 16.—Continued.

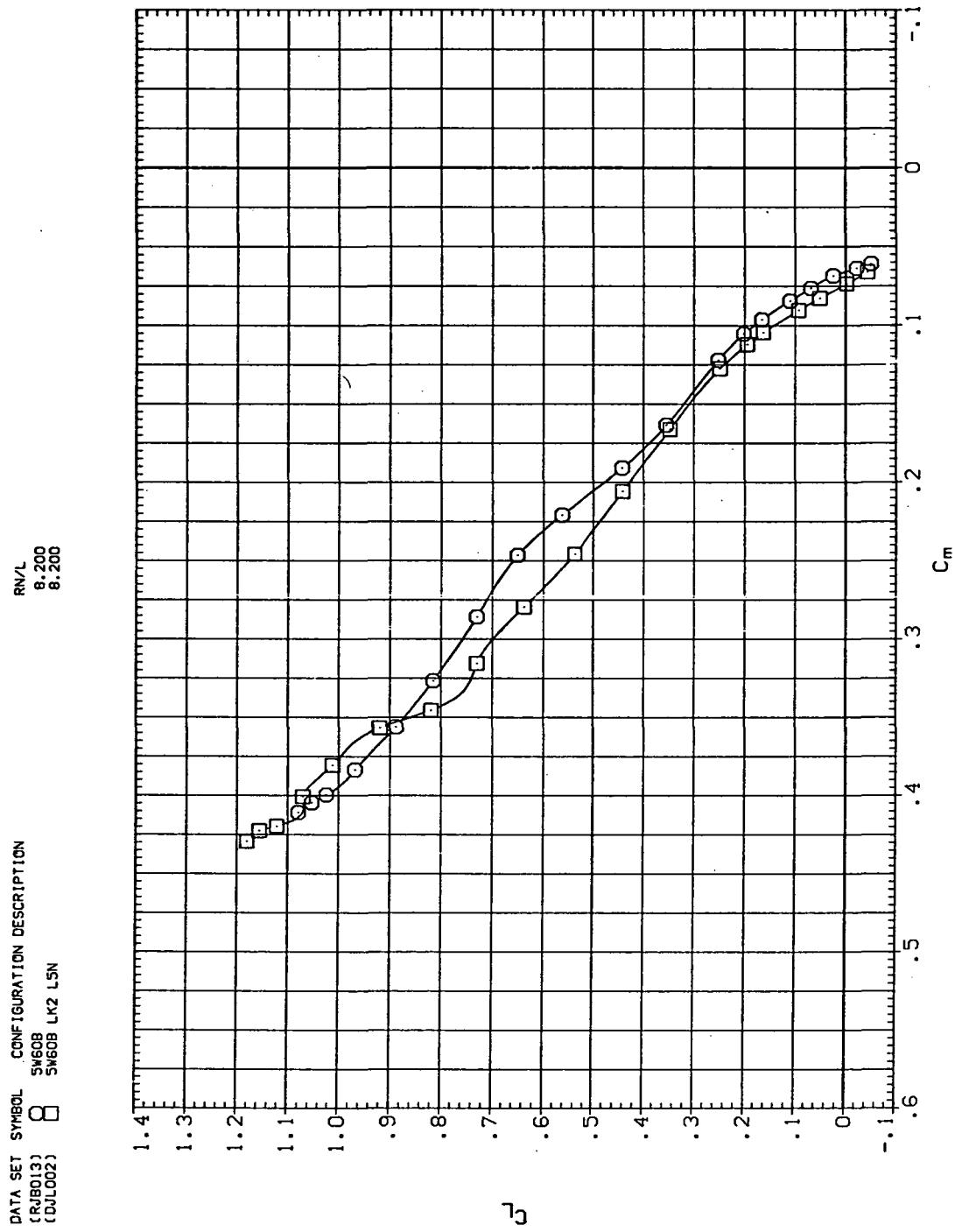


Figure 16.— Continued.

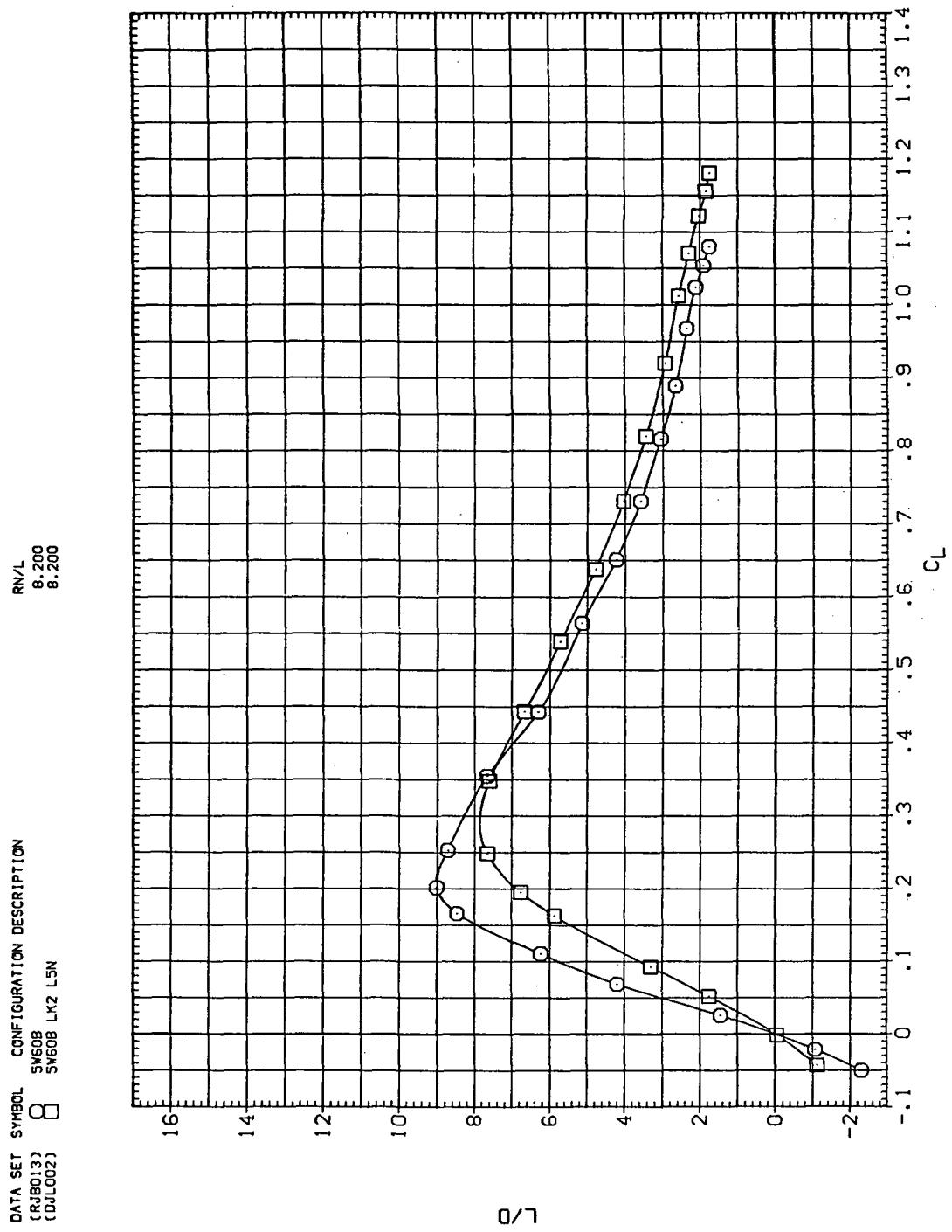
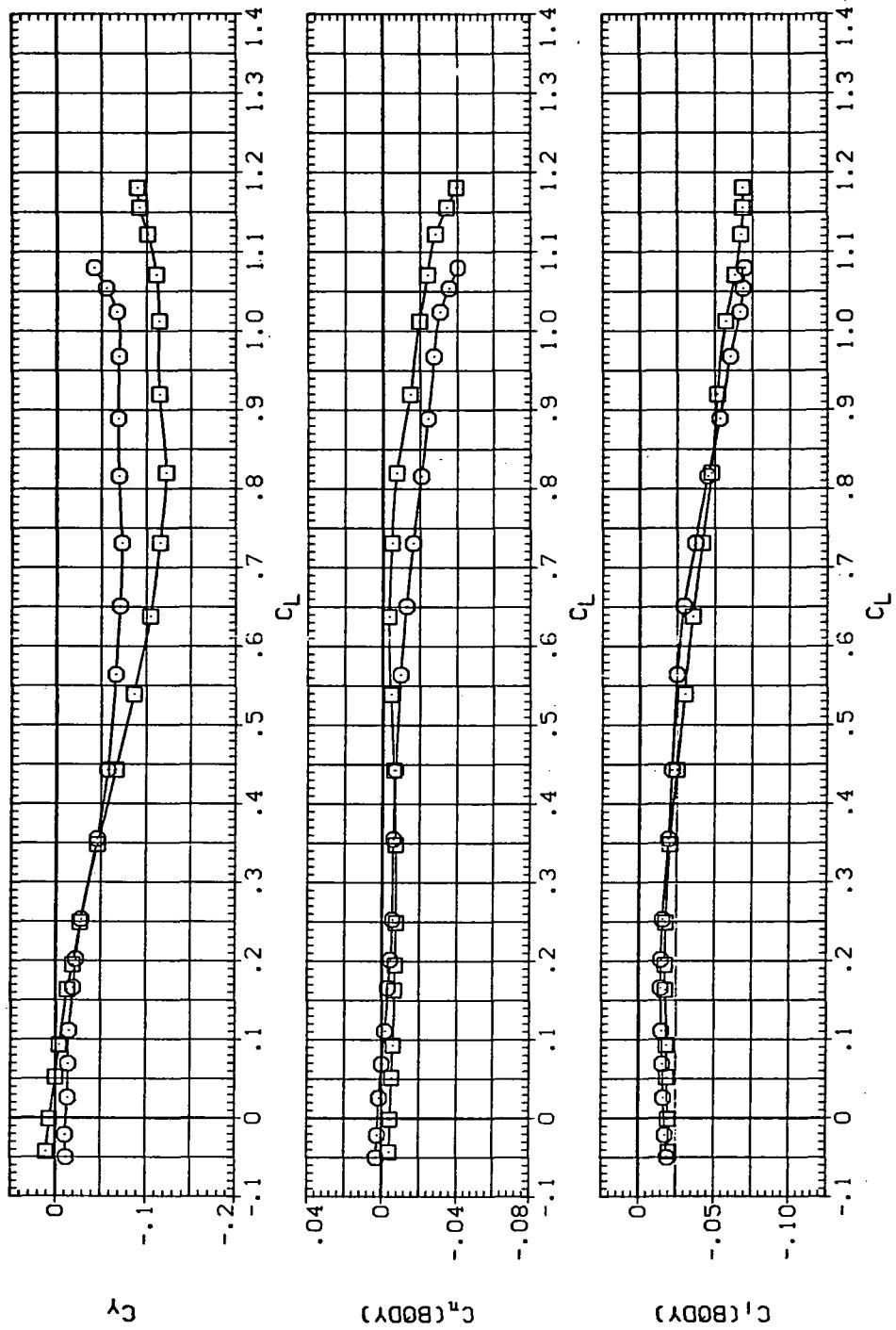


Figure 16.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 [CRJB013] 8 SW60B SW60B LK2 LSN

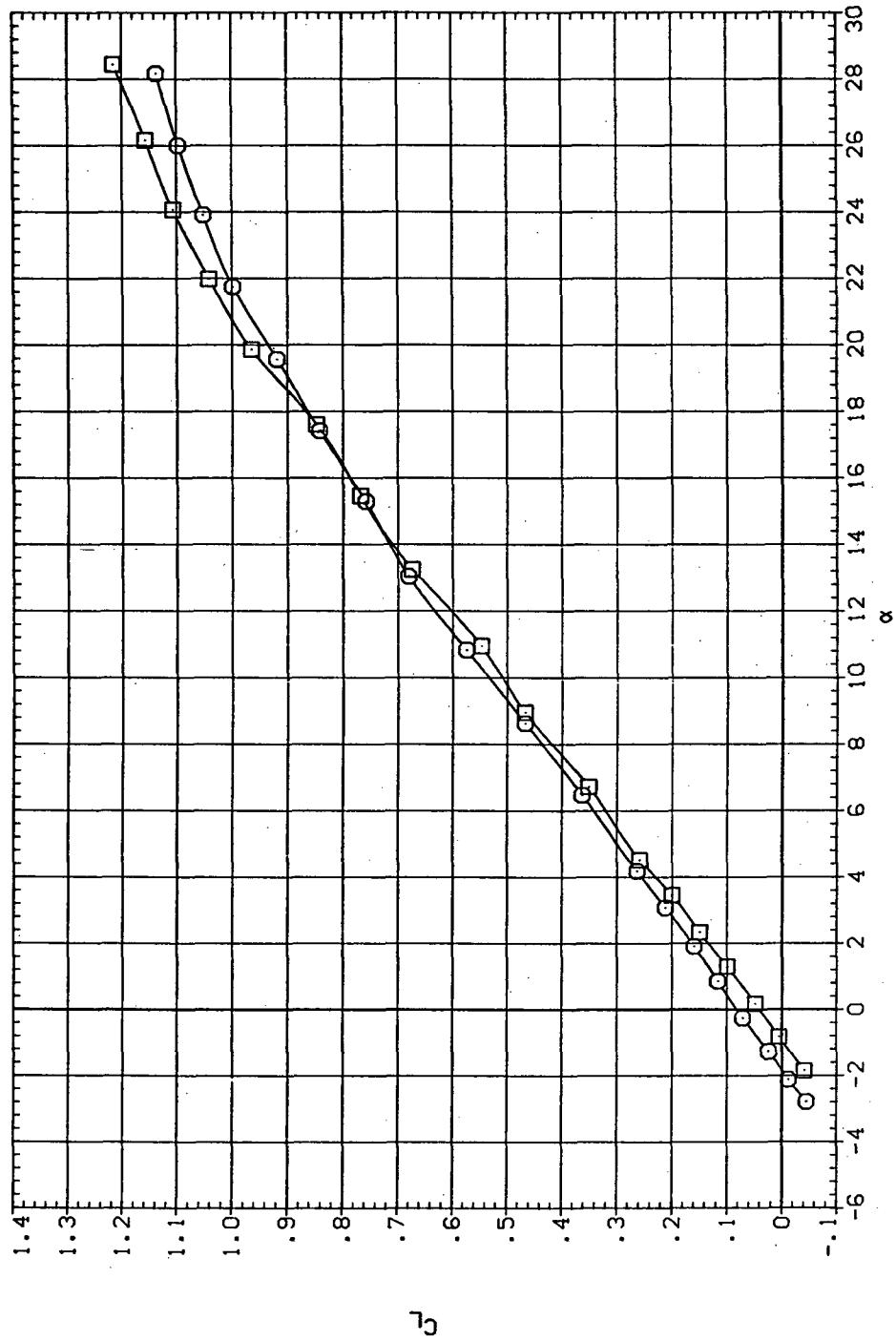
RN/L  
8.200



(e)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$

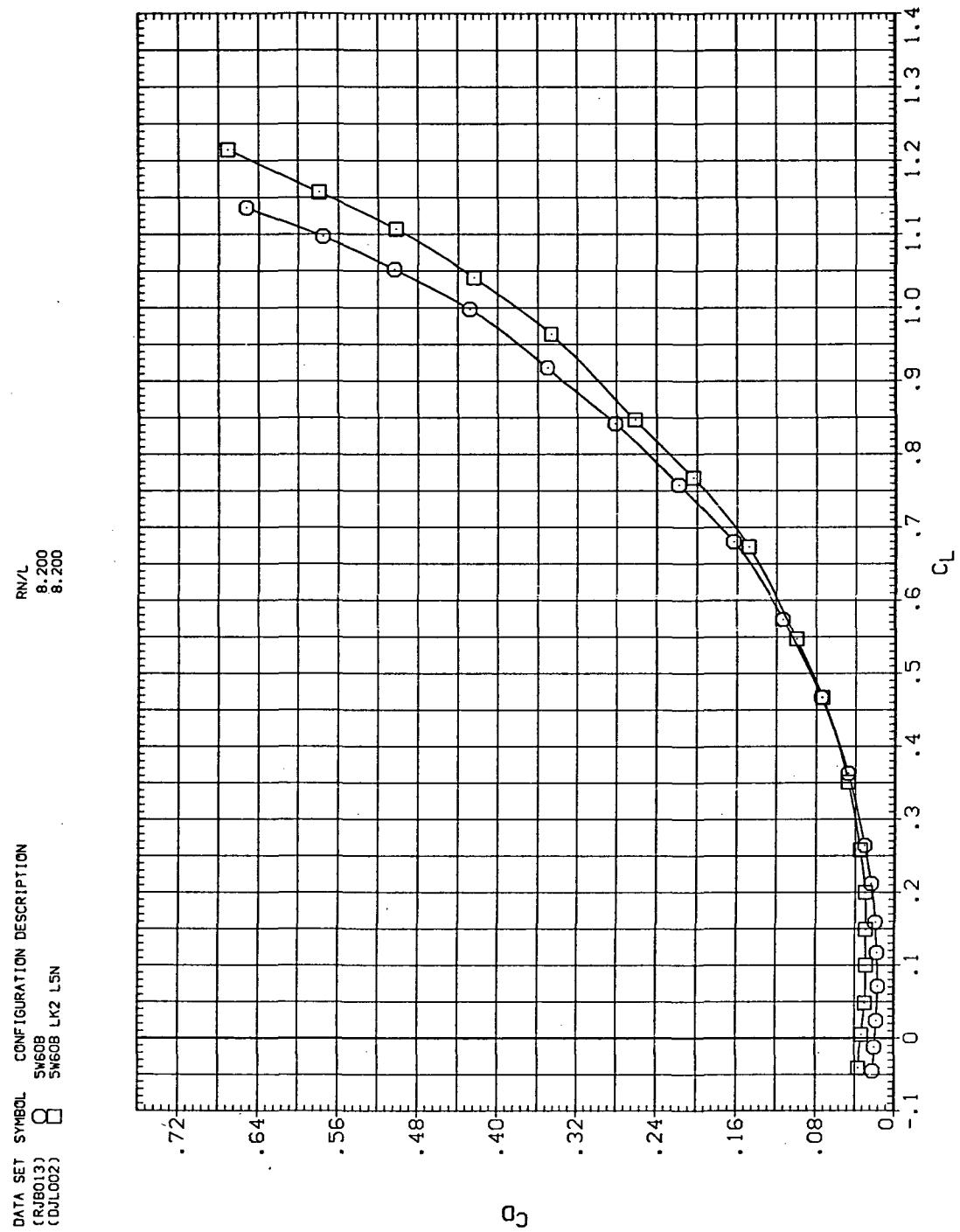
Figure 16.— Concluded.

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (RJB013) O SW60B  
 (DIL002) □ SW60B LK2 LSN



(a)  $C_L$  vs  $\alpha$

Figure 17.—Effect of Krüger nose flaps mounted on the drooped-nose flaps deflected  $5^\circ$ , downstream panel only:  $\Lambda = 60^\circ, M = 0.95$ .



(b)  $C_D$  vs  $C_L$

Figure 17.—Continued.

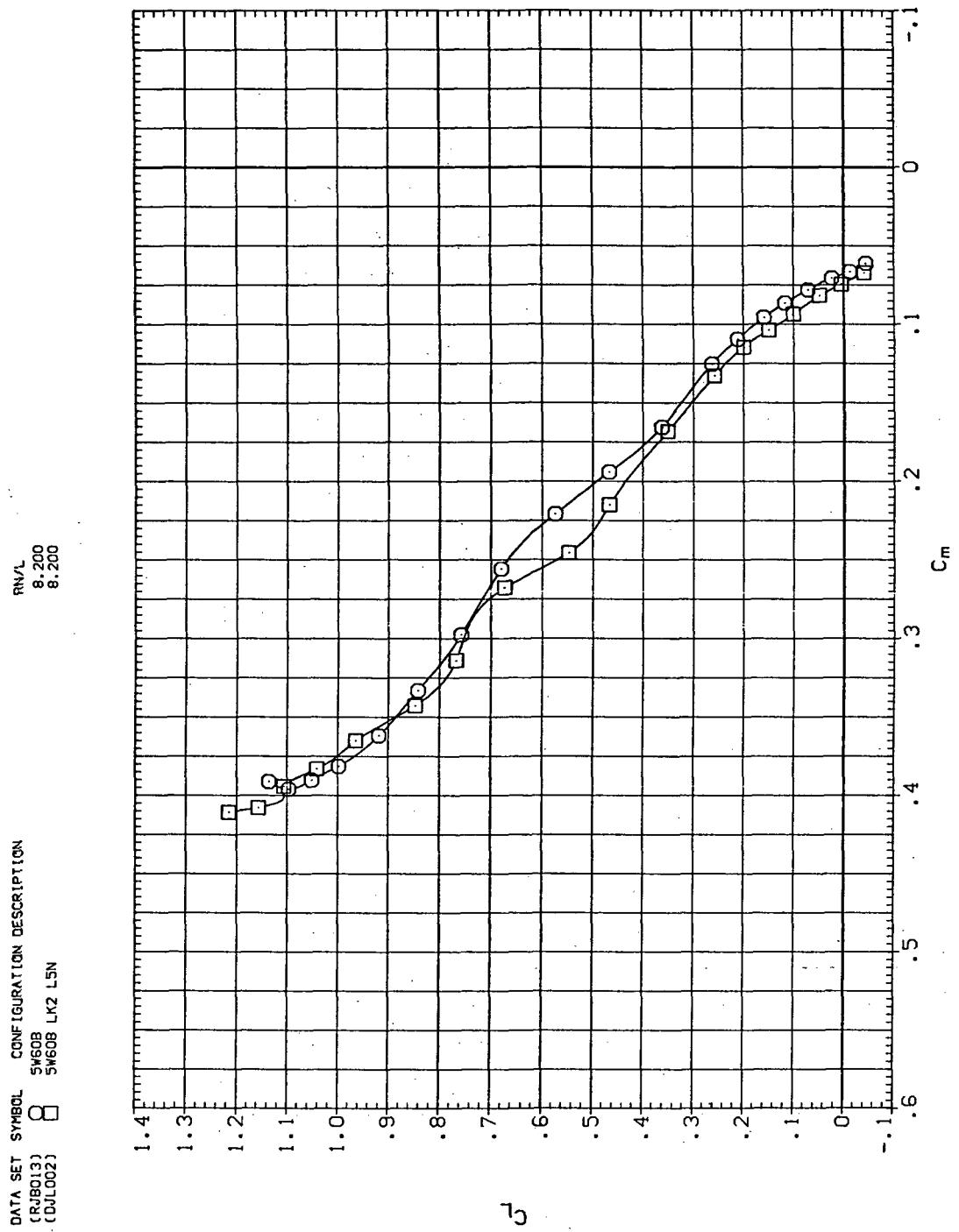
(c)  $C_L$  vs  $C_m$ 

Figure 17.—Continued.

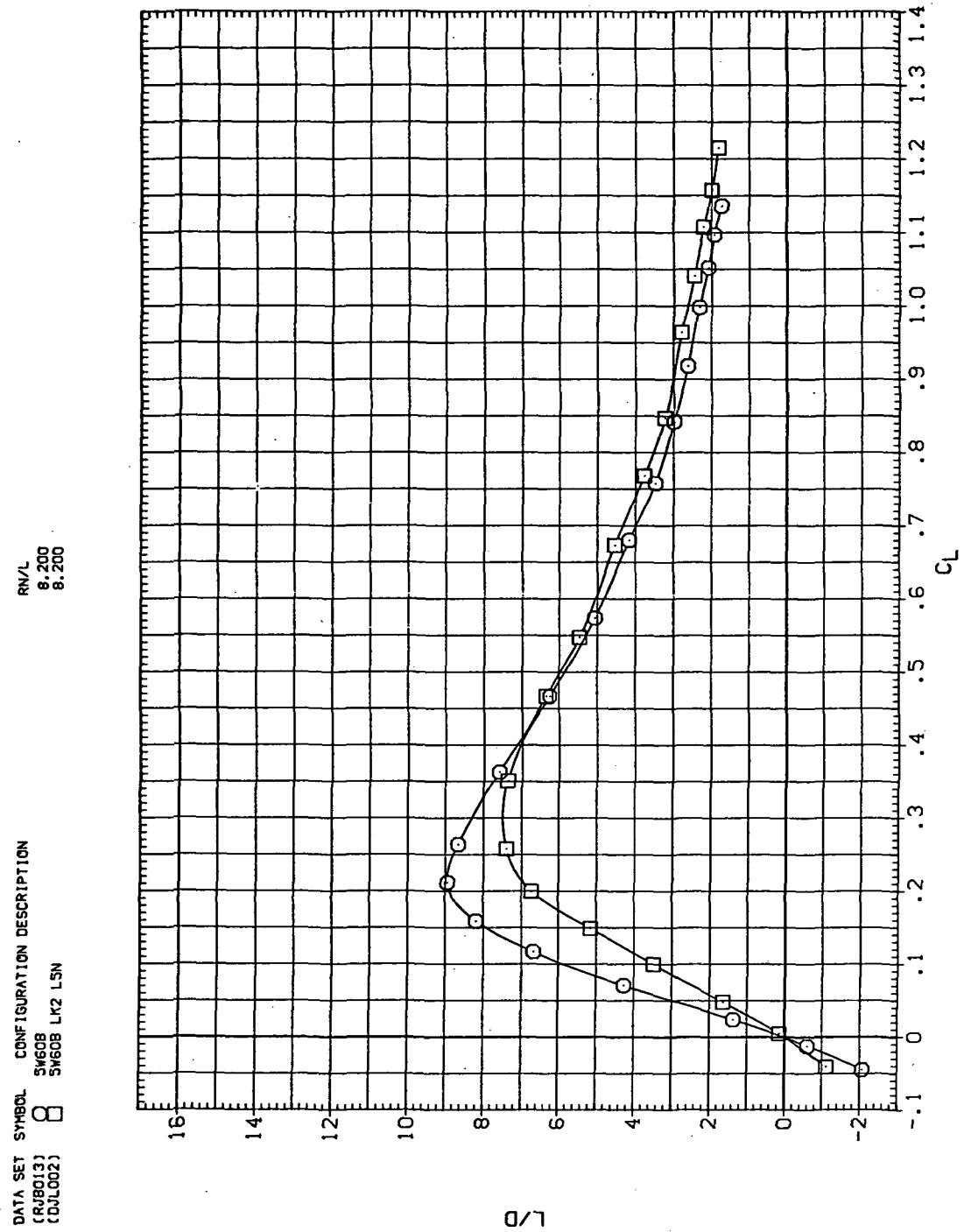
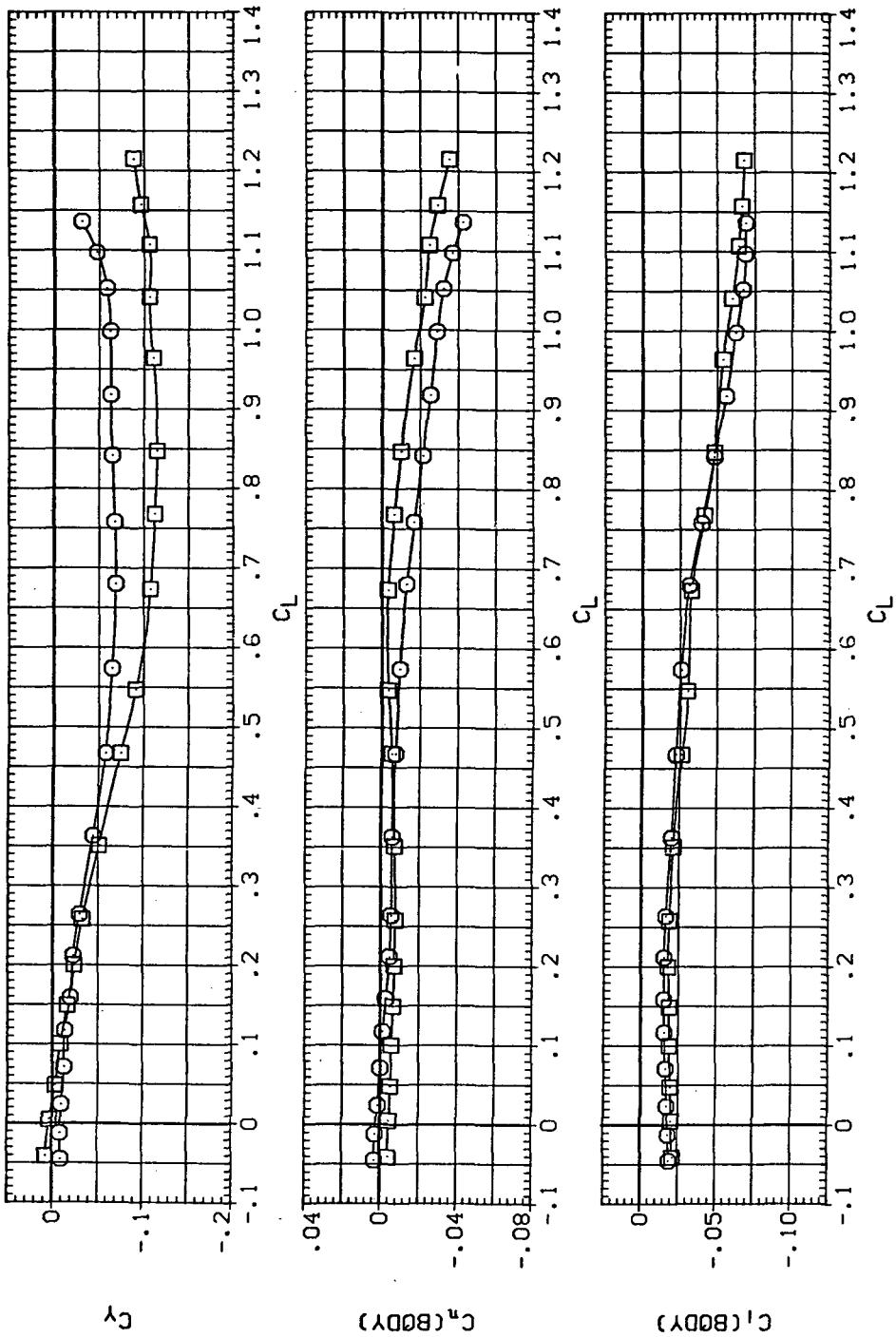


Figure 17.— Continued.

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
CRIB013	$\square$	SW608
(DJL002)		SW608 LK2 LSN



(e)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$

Figure 17.—Concluded.

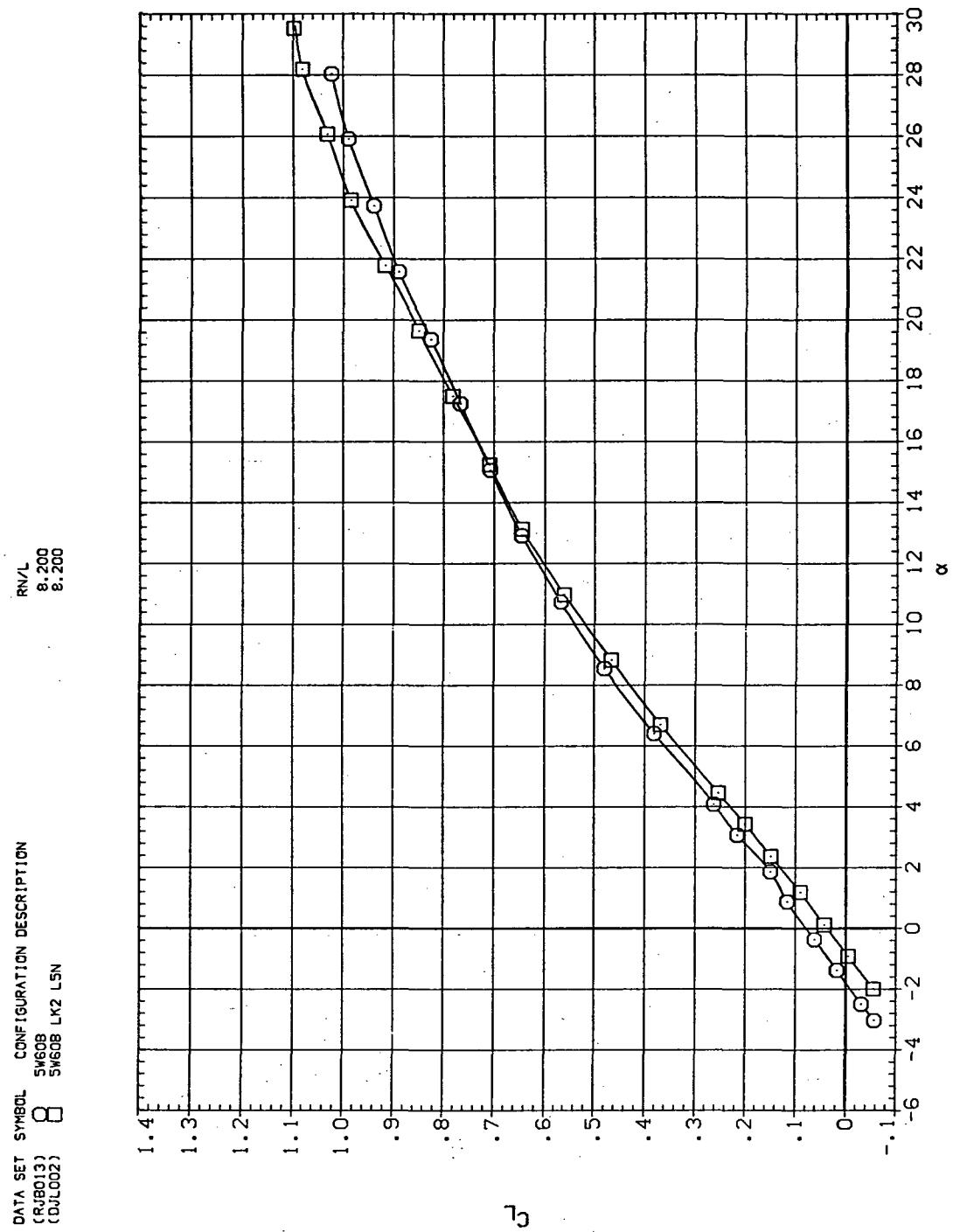
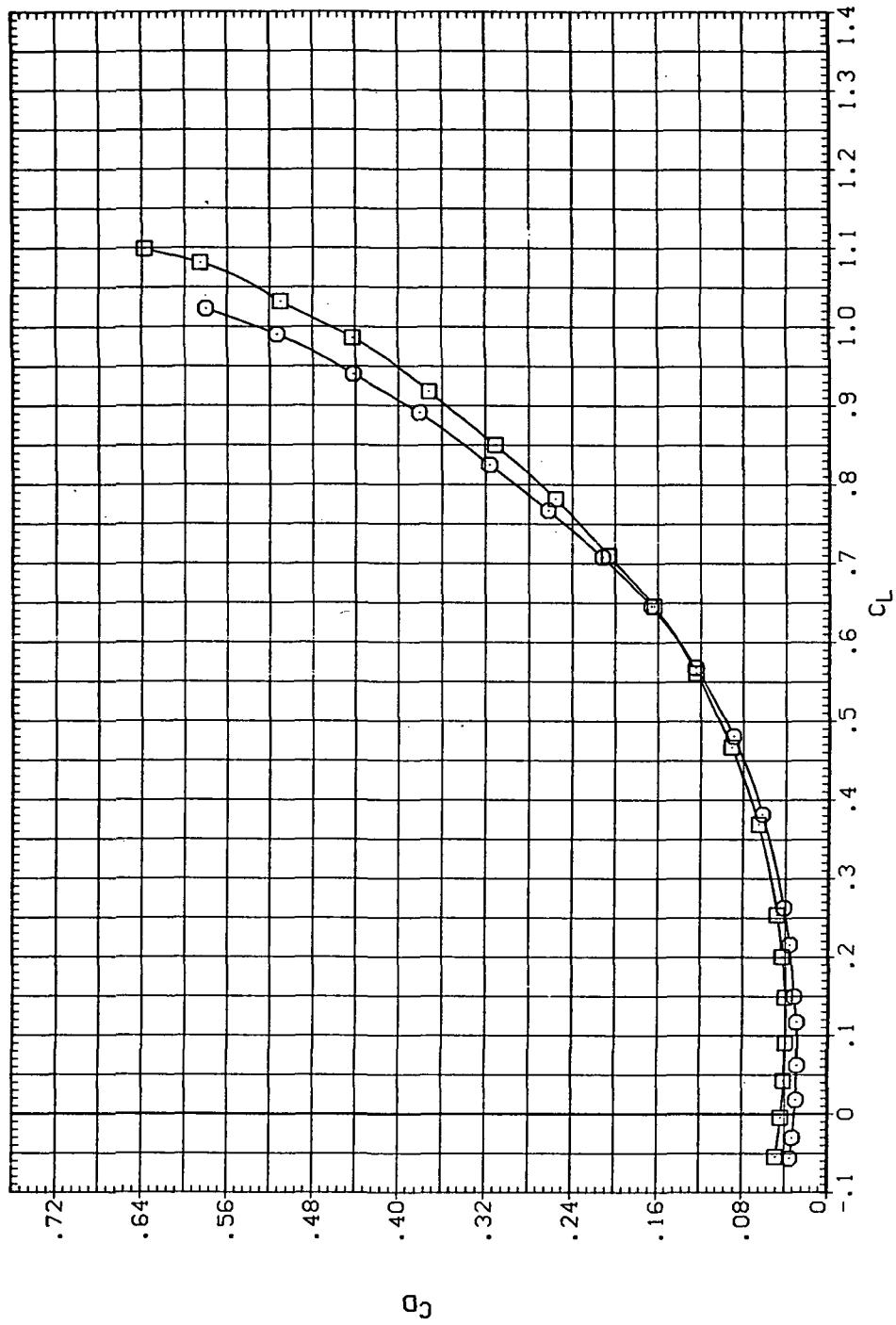


Figure 18.— Effect of Krueger nose flaps mounted on the drooped-nose flaps deflected  $5^\circ$ , downstream panel only;  $\Lambda = 60^\circ$ ,  $M = 1.4$ .

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(RJB013) (DJL002)	$\square$	SK608
		SK608 LK2 LSN

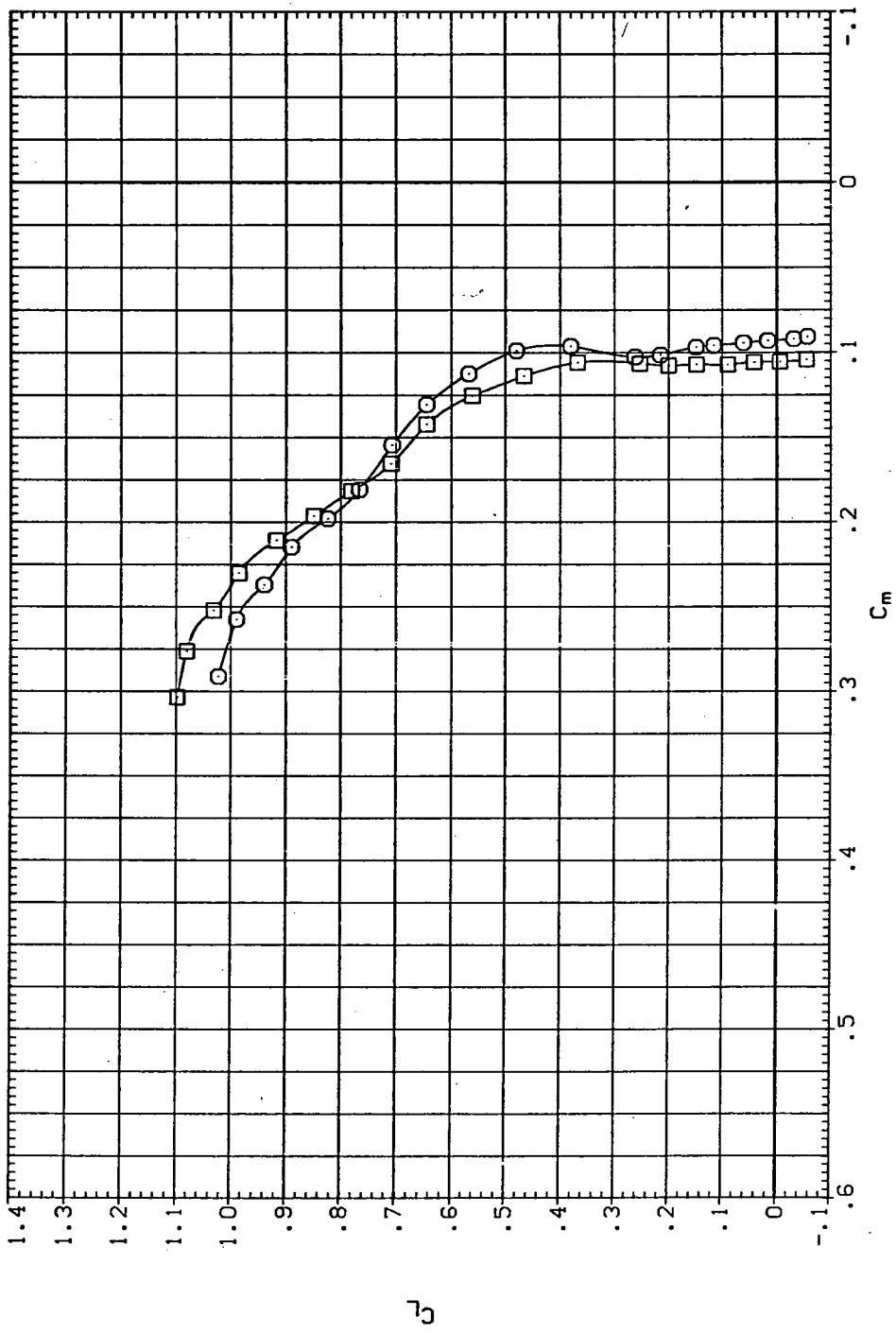


(b)  $C_D$  vs  $C_L$

Figure 18.—Continued.

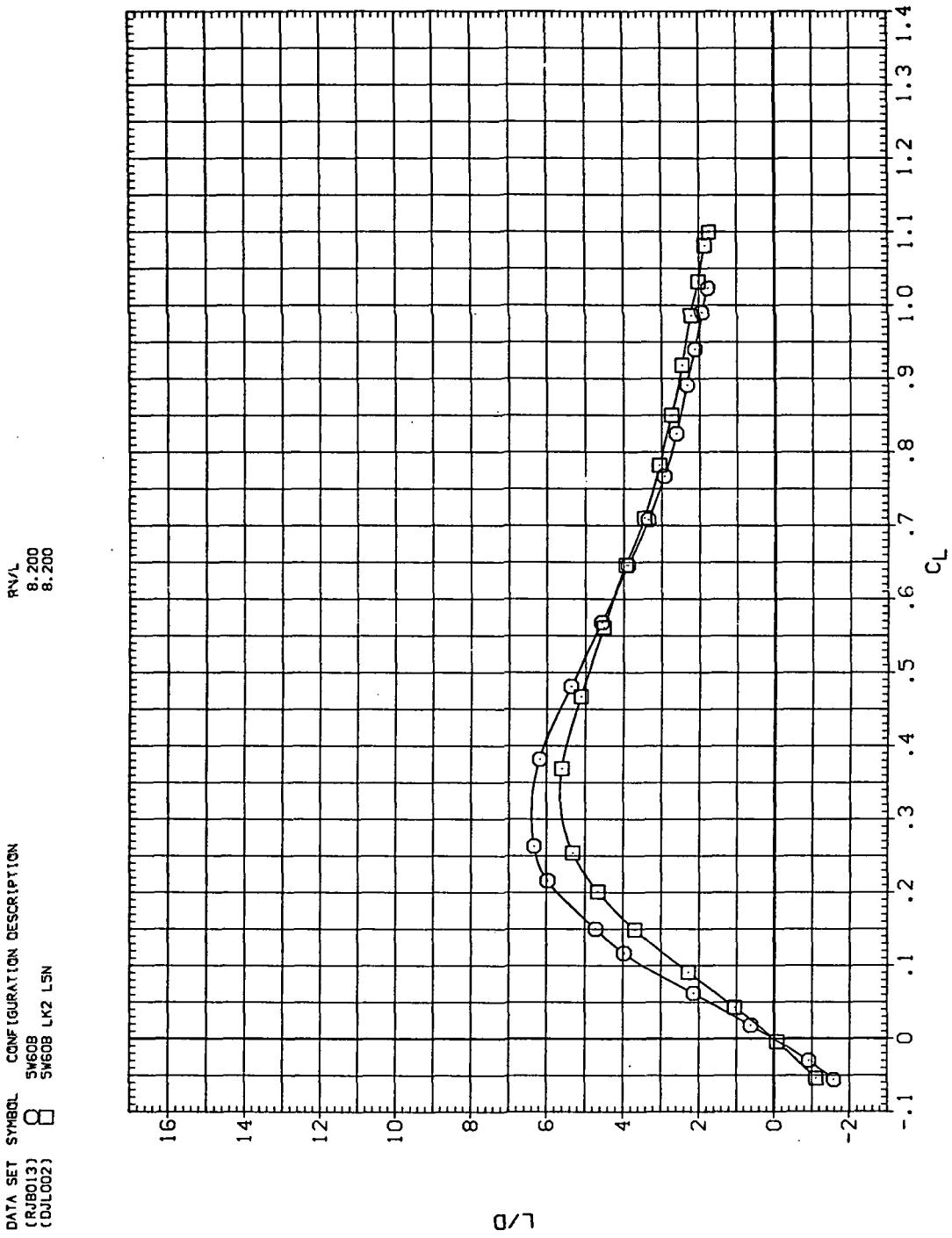
DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (RJL013)  $\square$  SJ60B SJ60B LK2 LSN  
 (QUL002)  $\circ$  SJ60B SJ60B LK2 LSN

RN/L  
 8.200  
 8.200



(c)  $C_L$  vs  $C_m$

Figure 18.—Continued.

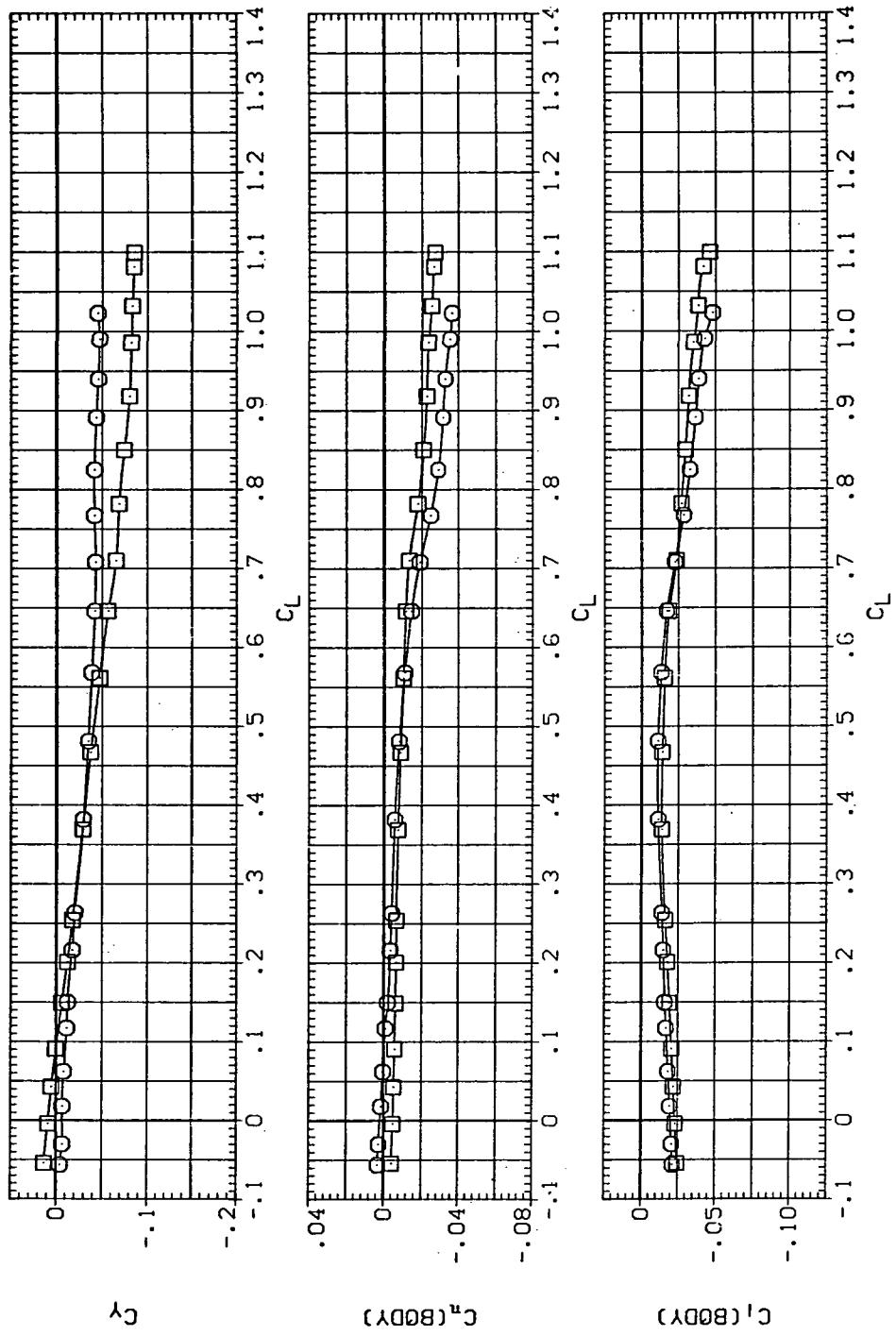


(d)  $L/D$  vs  $C_L$

Figure 18.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (R8B013)  $\square$  SW60B  
 (DJL002)  $\circ$  SW60B LK2 LSN

RN/L  
 8,200  
 8,200



(e)  $C_Y$ ,  $C_n$ , and  $C_i$  vs  $C_L$

Figure 18.— Concluded.

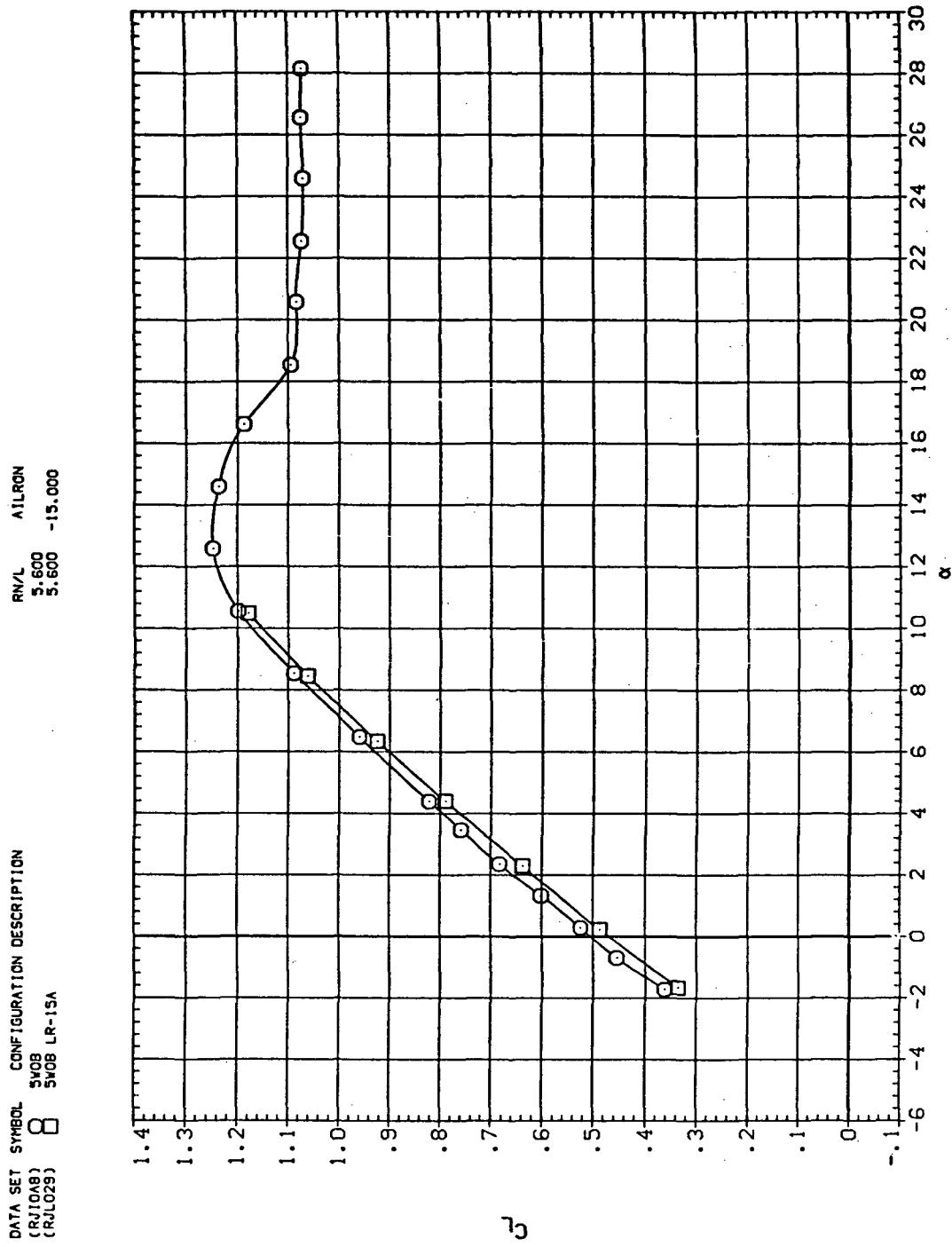
(a)  $C_L$  vs  $\alpha$ 

Figure 19.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 0, M = 0.25$ .

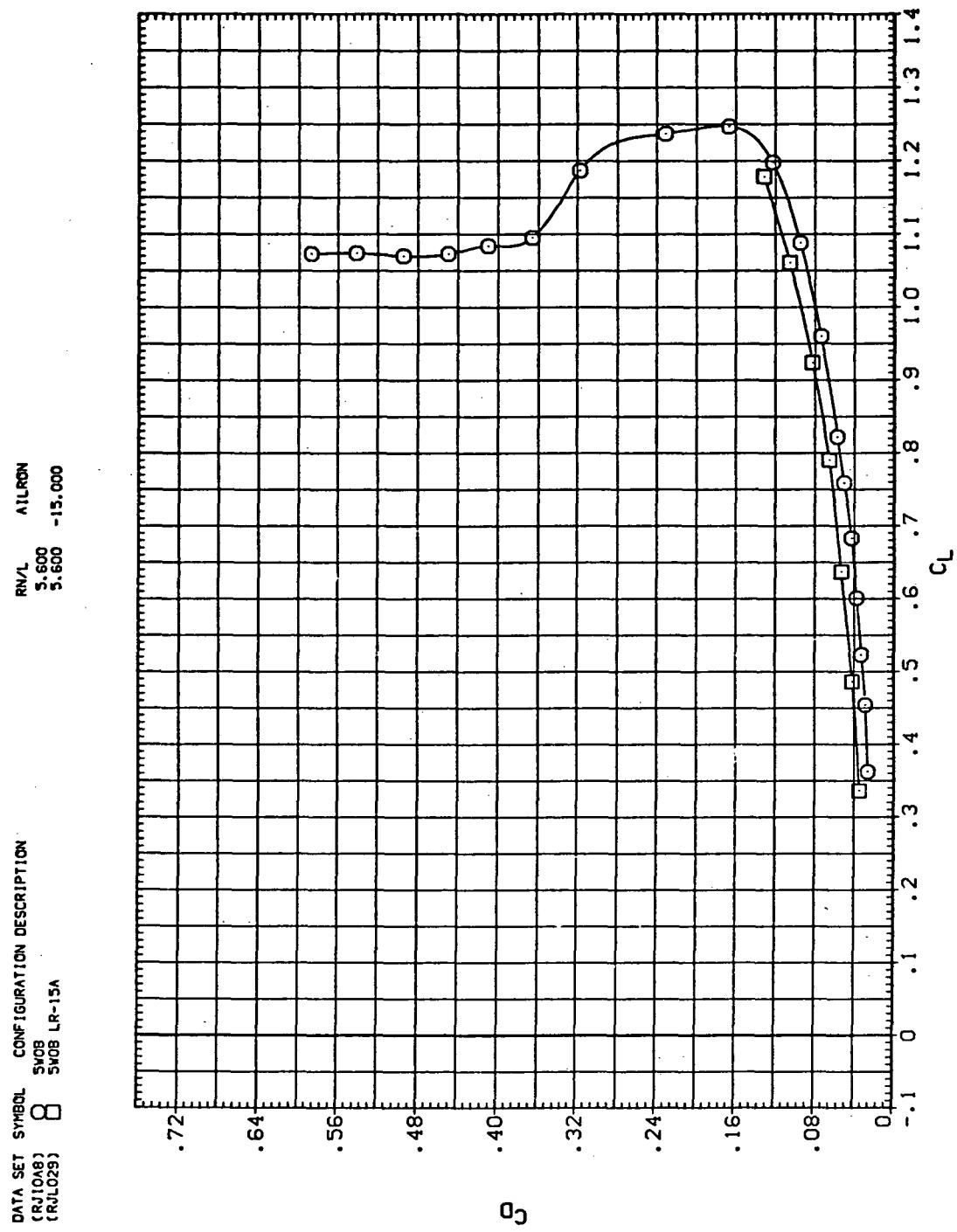
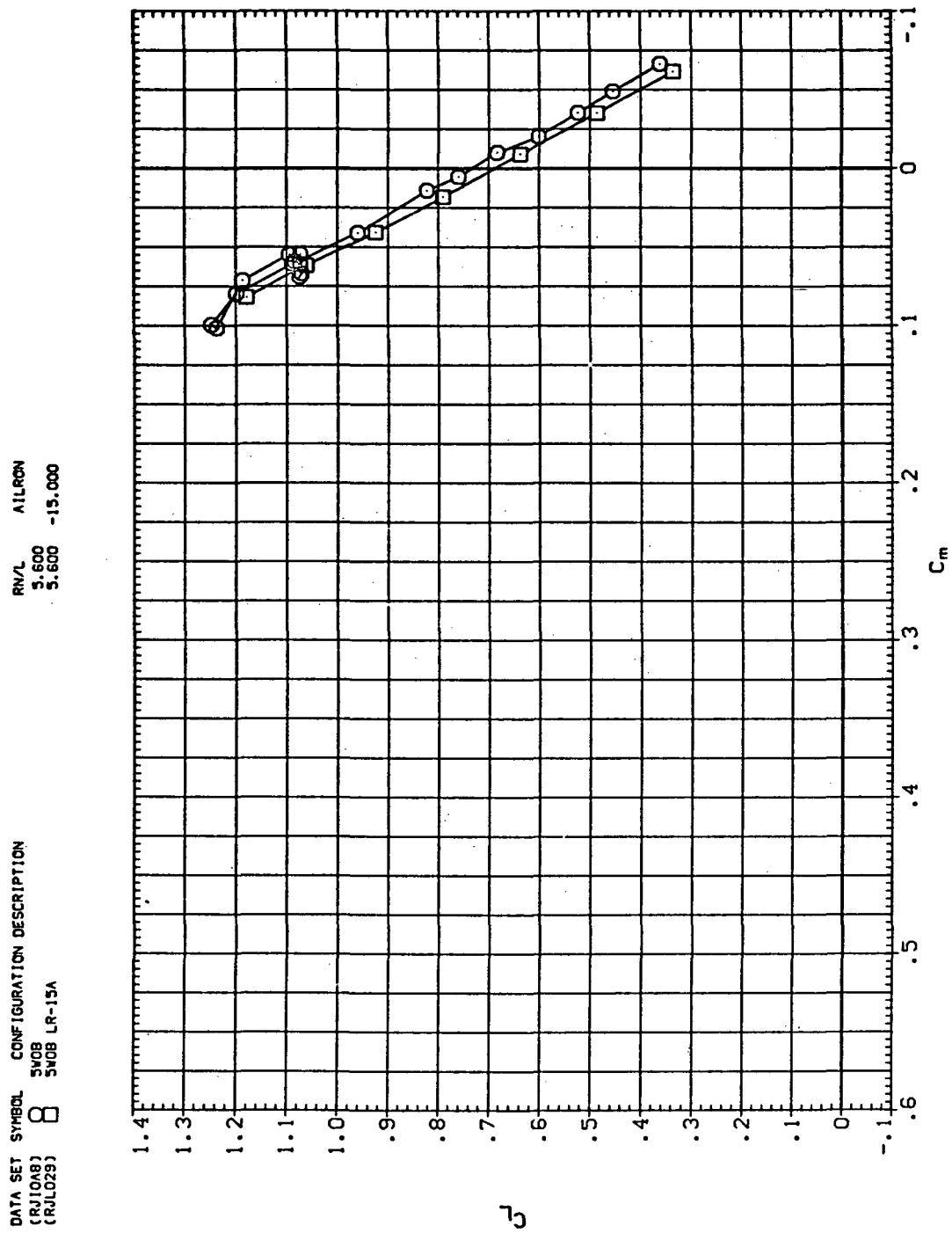
(b)  $C_D$  vs  $C_L$ 

Figure 19.—Continued.



(c)  $C_L$  vs  $C_m$

Figure 19.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (RN/008) SWOB (RN/029) SWOB LR-15A

RN/L AILRON  
 5,600 5,600 -15,000

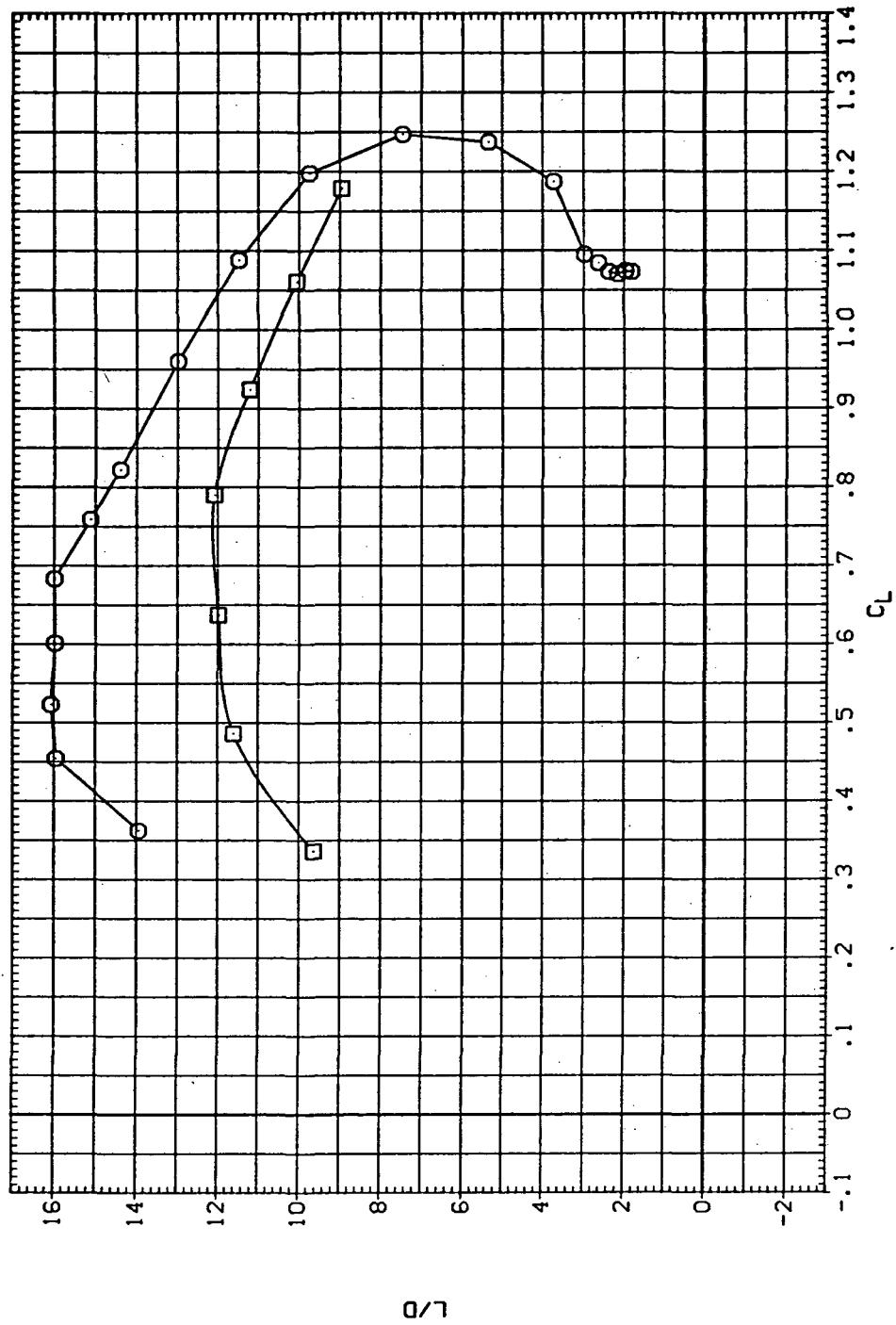
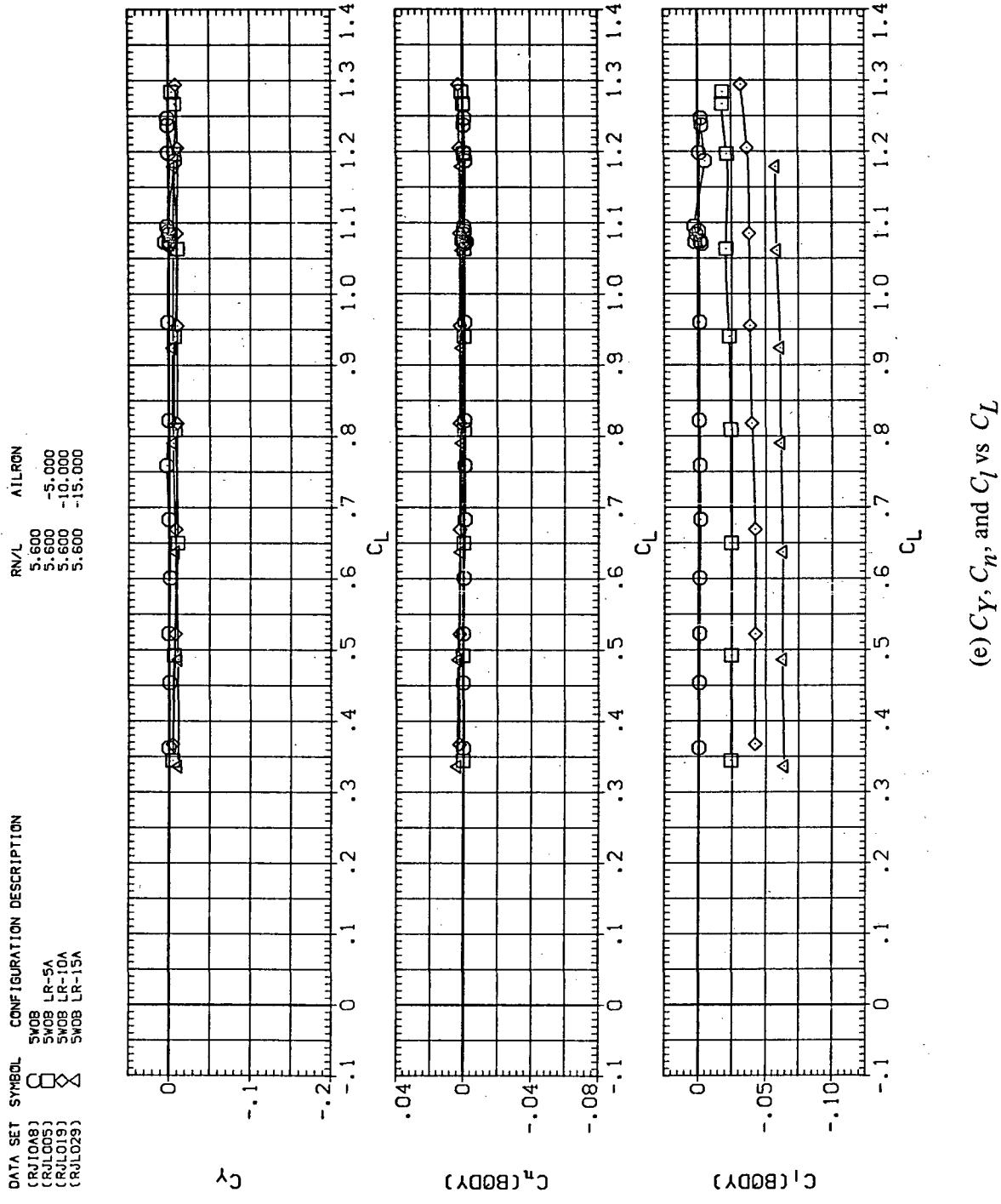
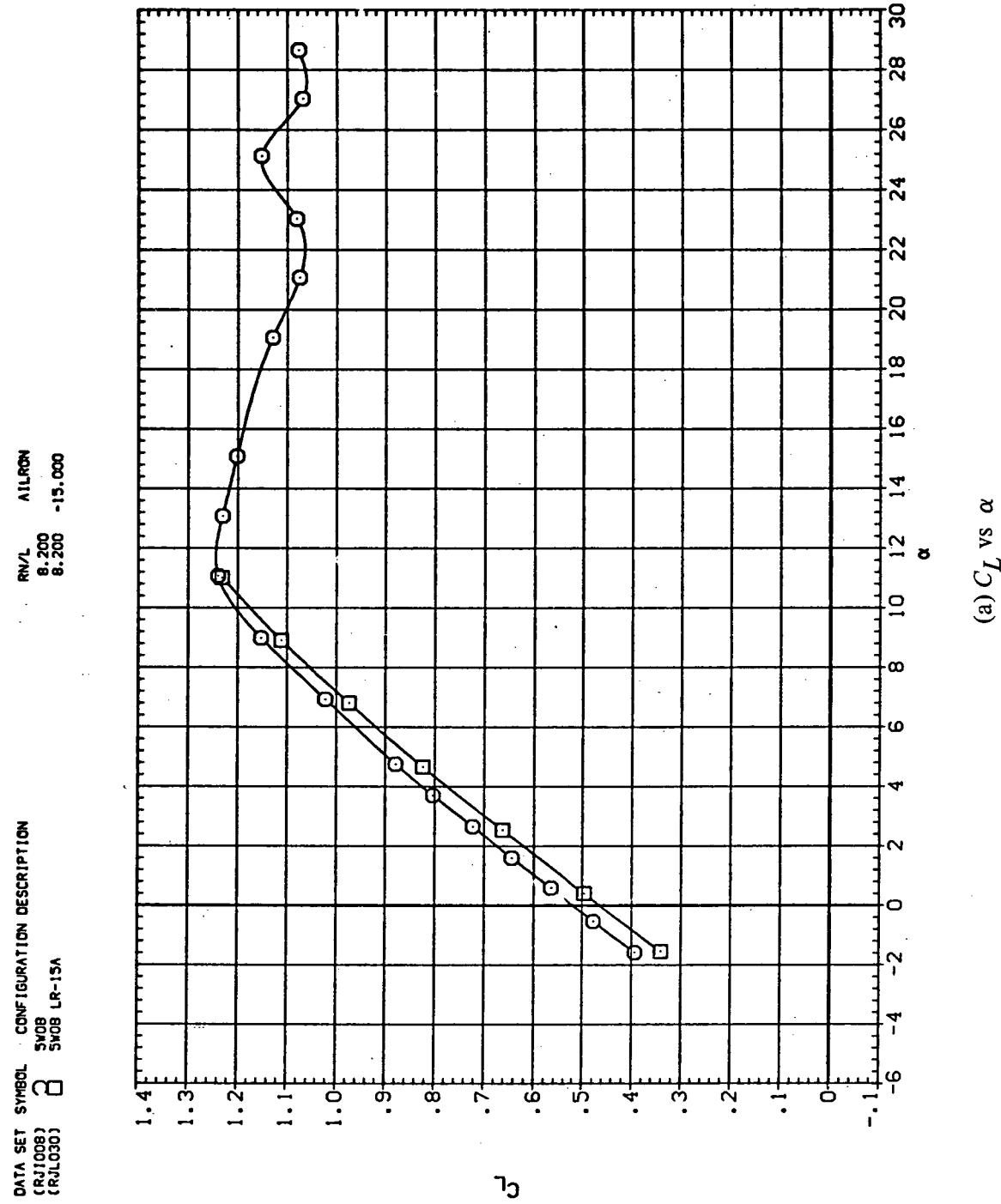
(d)  $L/D$  vs.  $C_L$ 

Figure 19.—Continued.



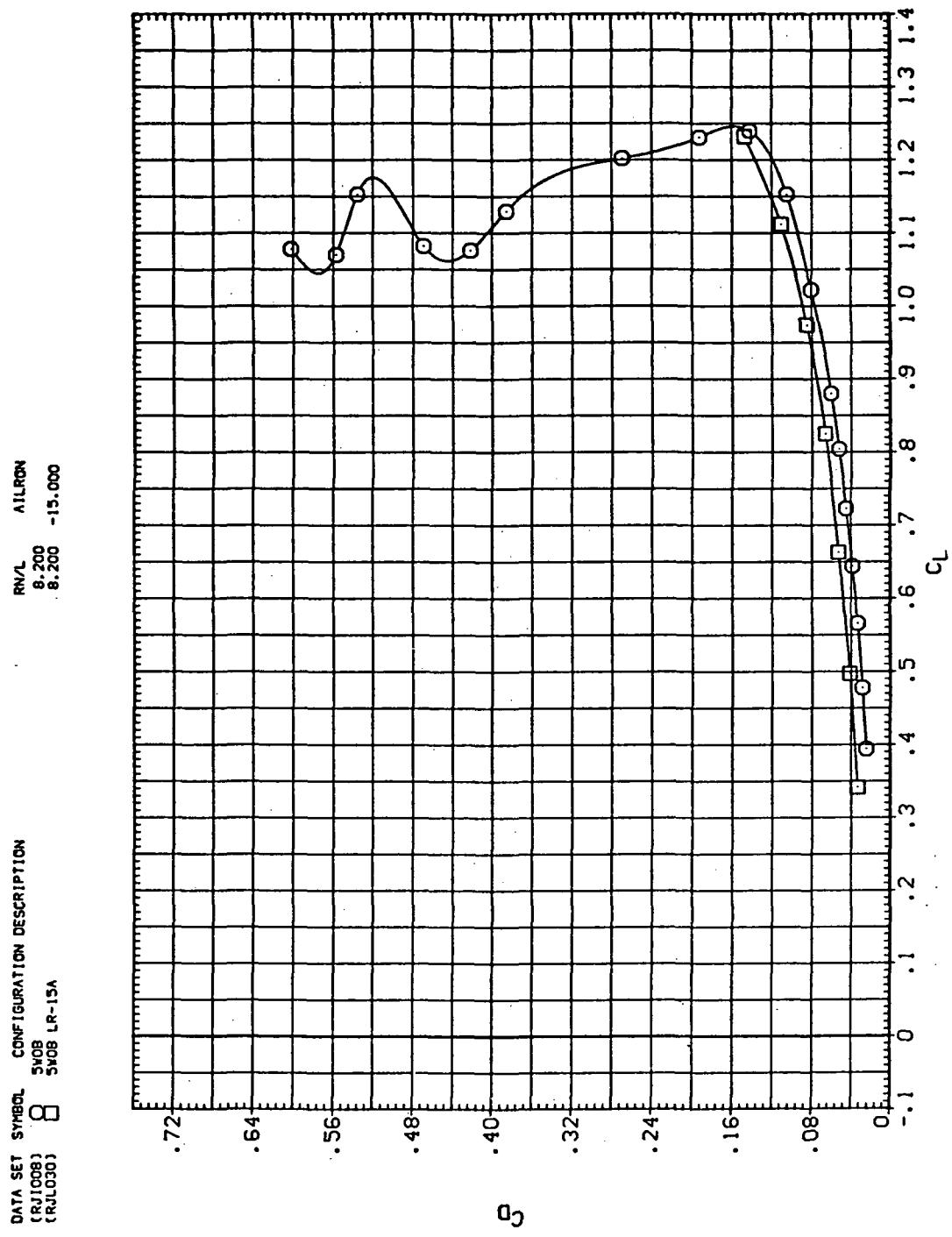
(e)  $C_Y$ ,  $C_n$ , and  $C_1$  vs  $C_L$

Figure 19.— Concluded.



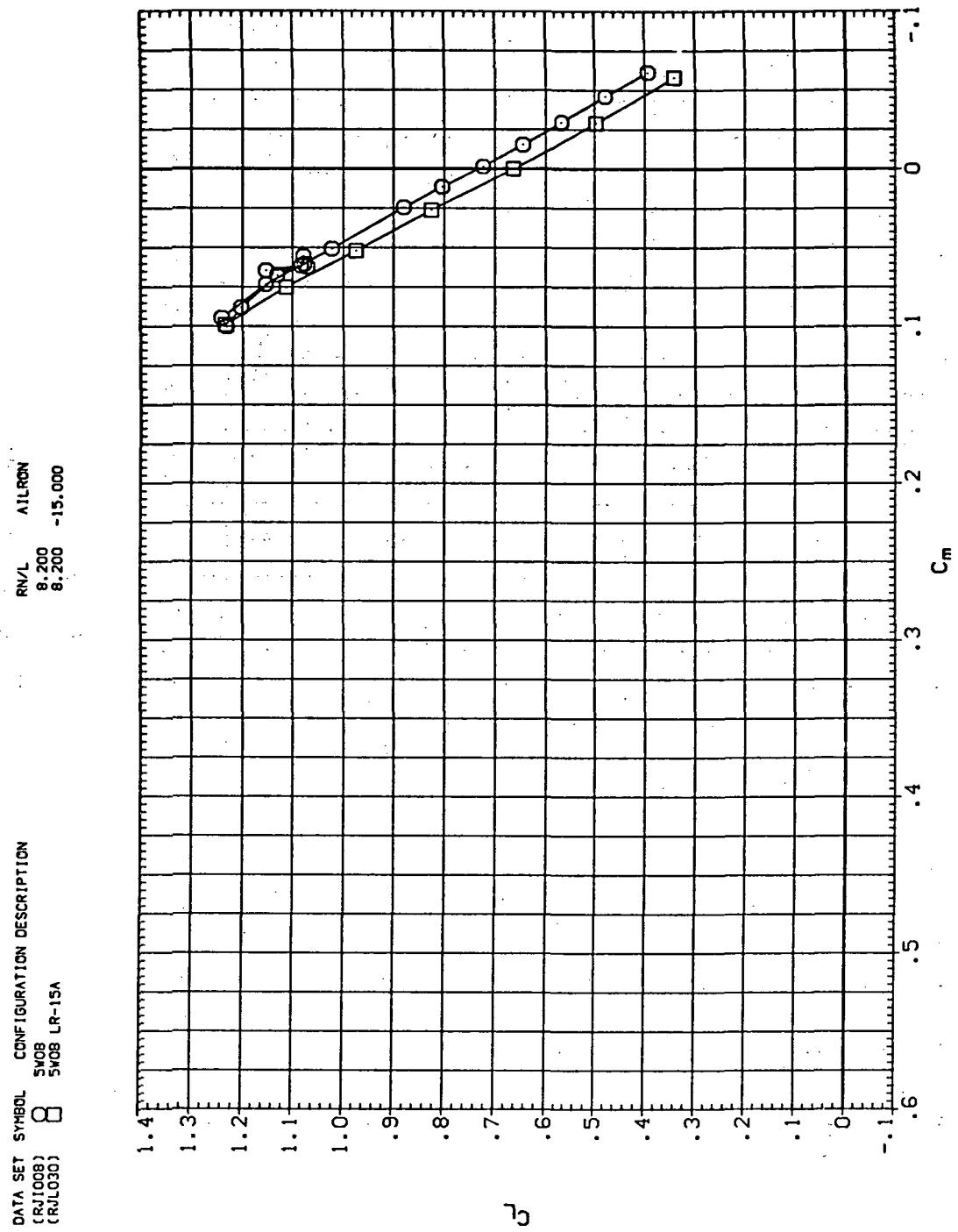
(a)  $C_L$  vs  $\alpha$

Figure 20.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 0, M = 0.40$ .



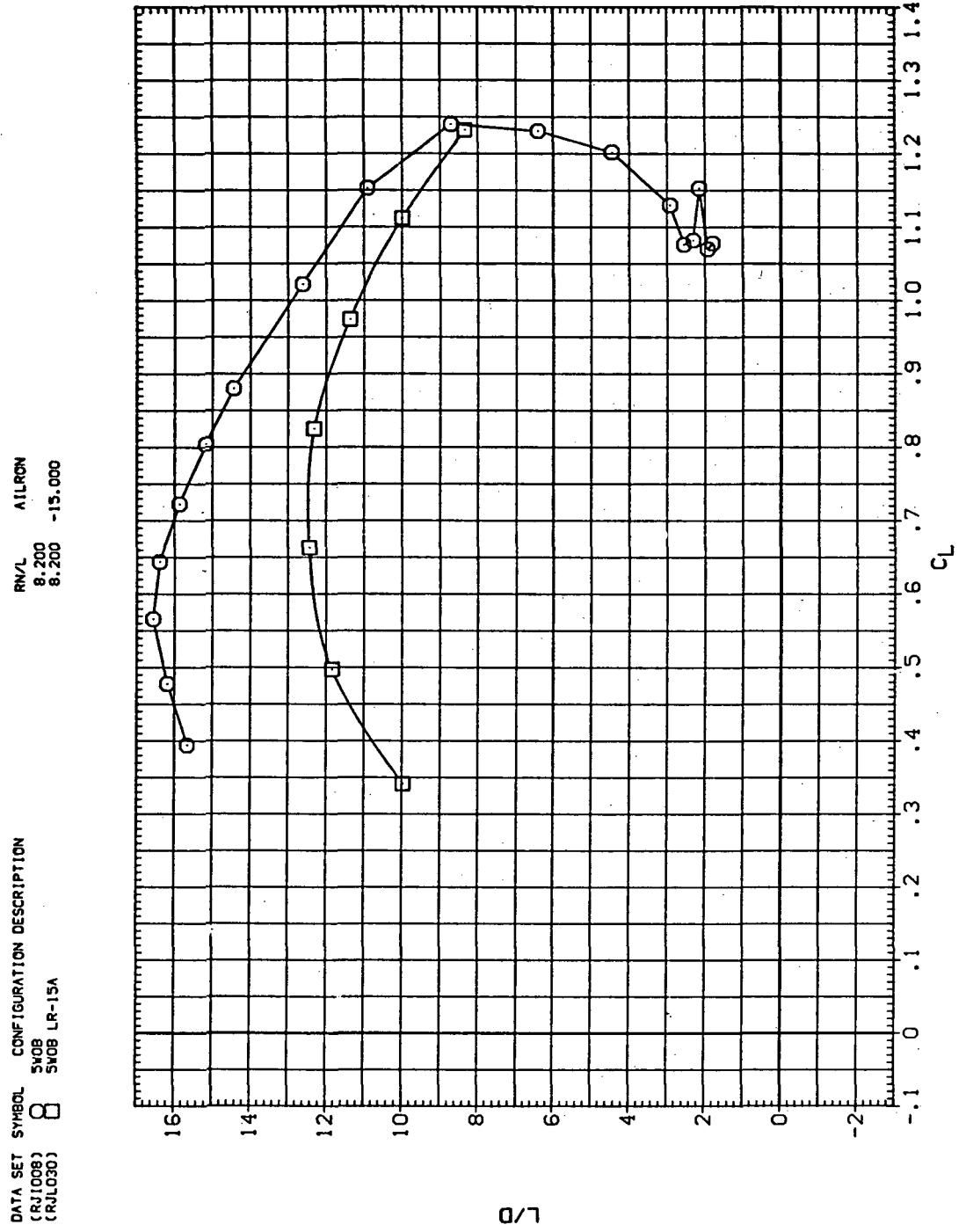
(b)  $C_D$  vs  $C_L$

Figure 20.—Continued.



(c)  $C_L$  vs  $C_m$

Figure 20.—Continued.



(d)  $L/D$  vs  $C_L$

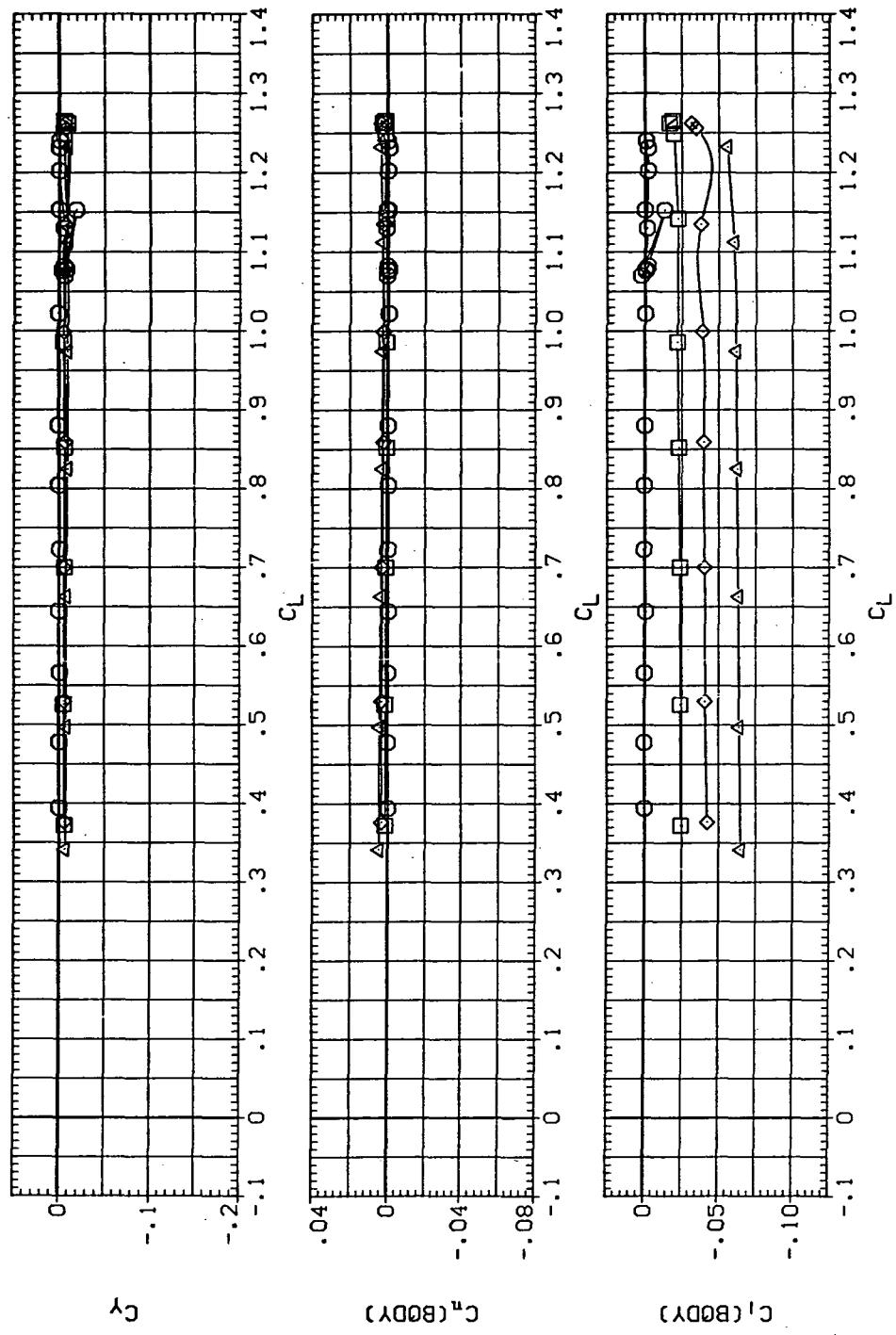
Figure 20.— Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RJ1008)		SJOB
(RJ1006)		SJOB LR-5A
(RJ1020)		SJOB LR-10A
(RJ1030)		SJOB LR-15A

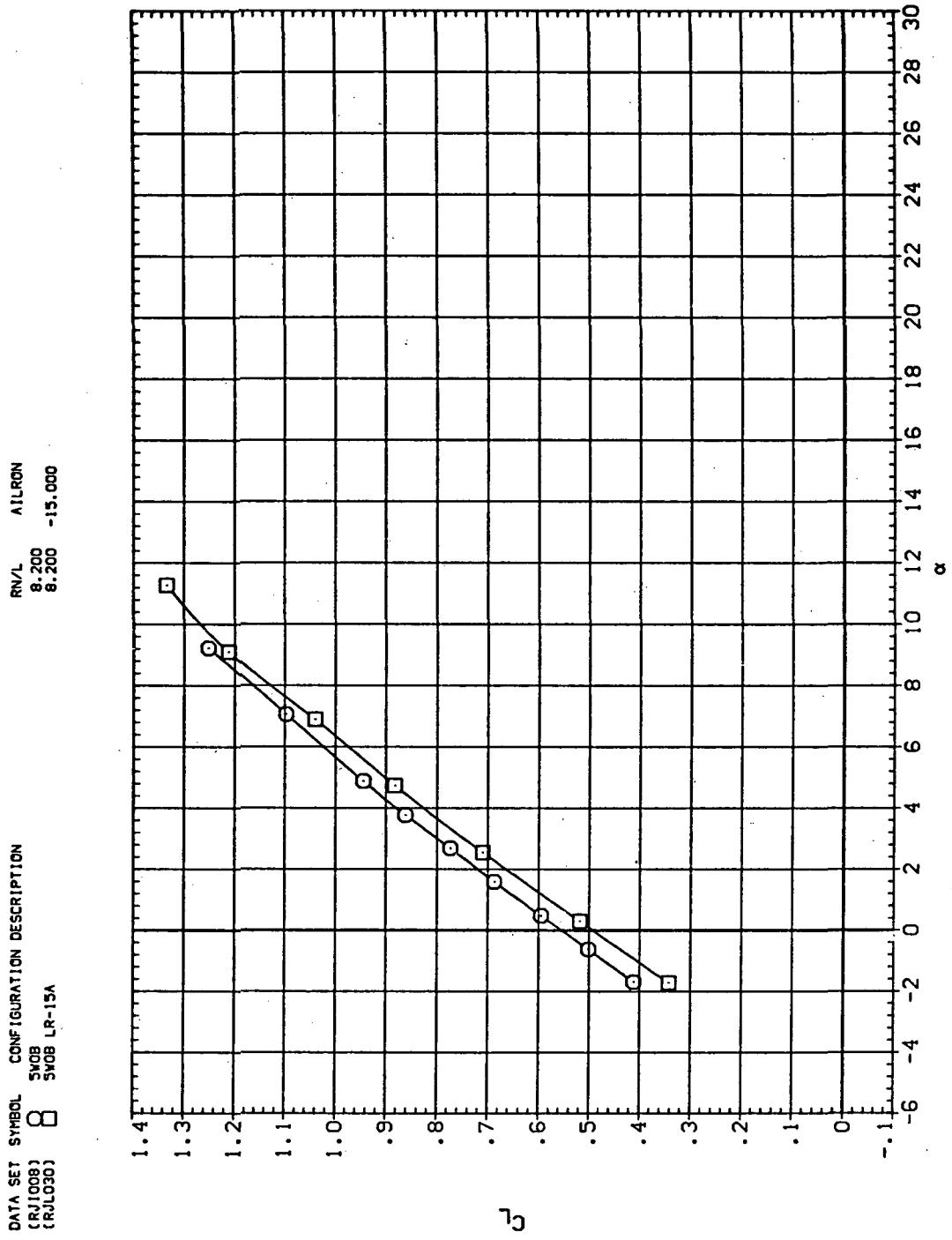
RVAL ATIRON

8.200	-5.000
8.200	-10.000
8.200	-15.000



(e)  $C_Y$ ,  $C_n$ , and  $C_L$  vs  $C_L$

Figure 20.— Concluded.



(a)  $C_L$  vs  $\alpha$

Figure 21.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 0, M = 0.60$ .

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(RJ1008) SJ08  
(RJ1030) SJ08 LR-15A

RN/L 8.200 AILRON  
8.200 -15,000

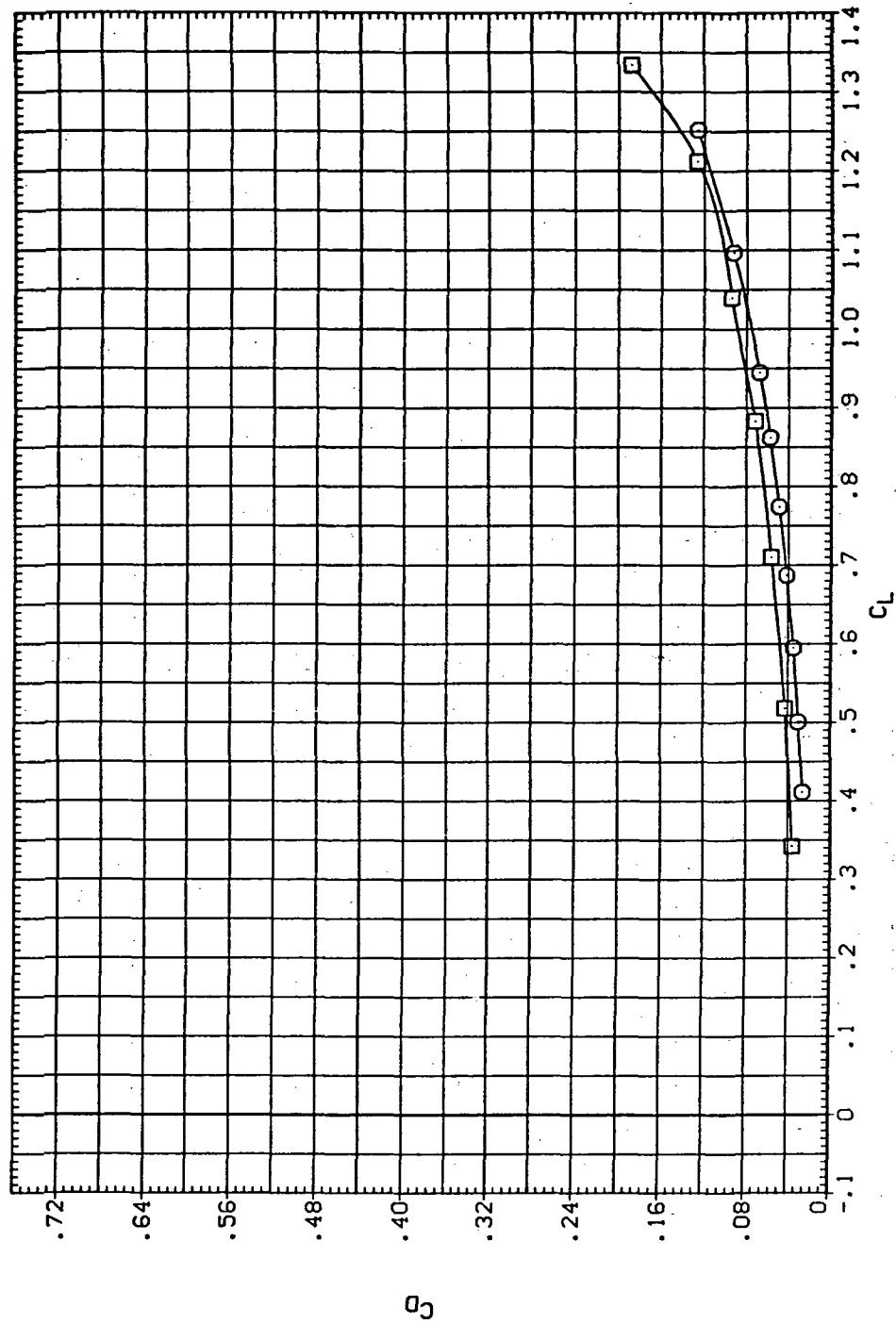
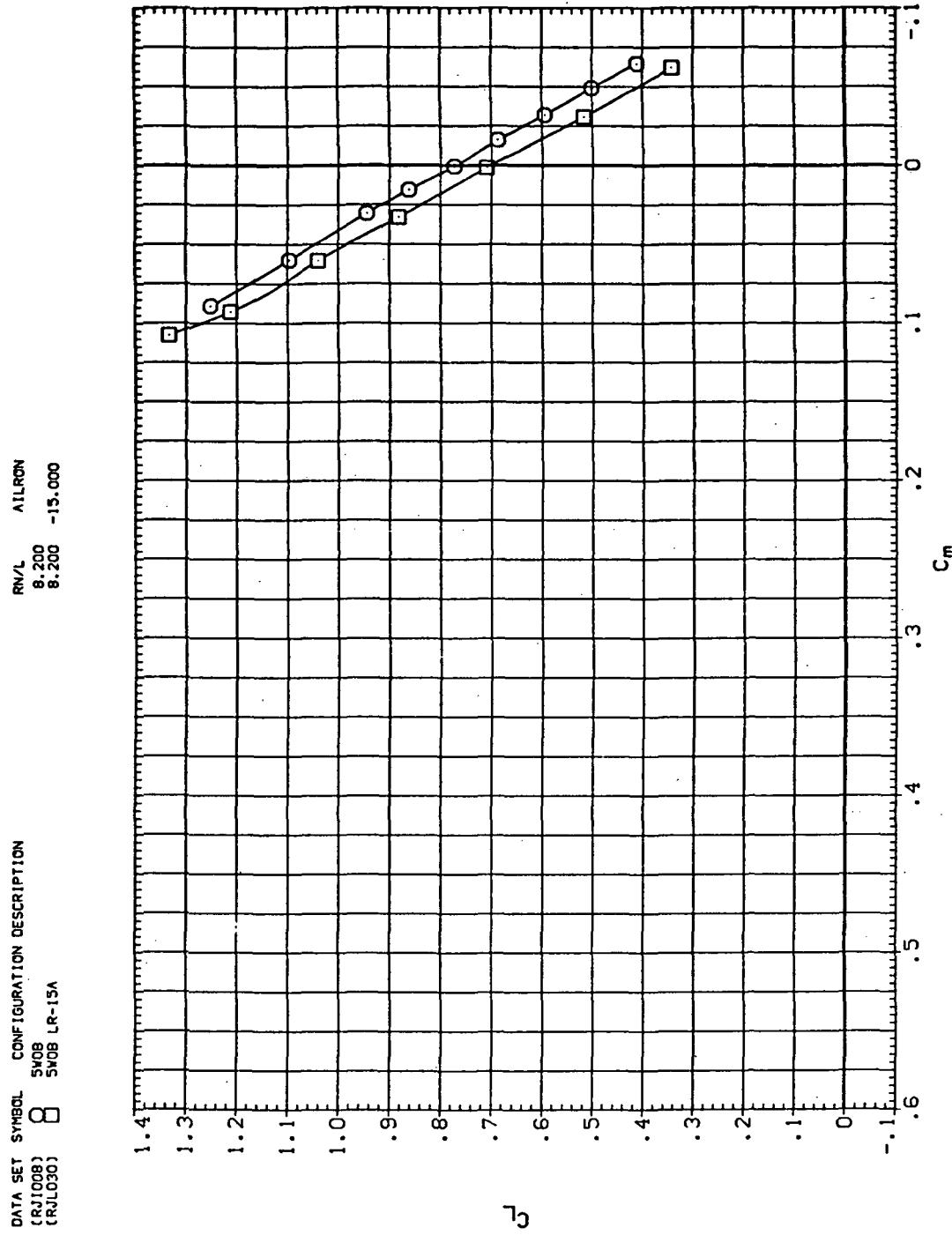
(b)  $C_D$  vs  $C_L$ 

Figure 21.—Continued.



(c)  $C_L$  vs  $C_m$

Figure 21.—Continued.

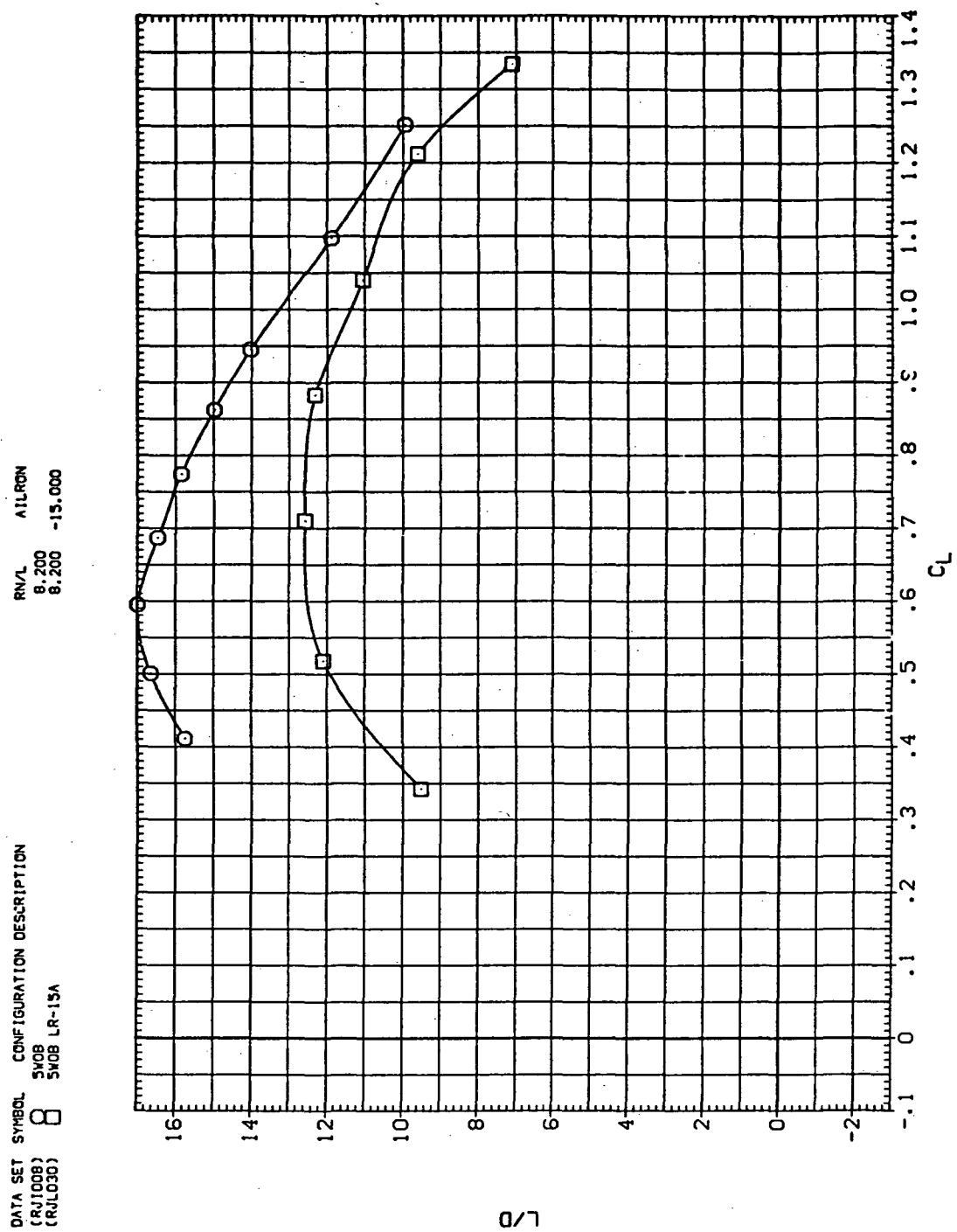
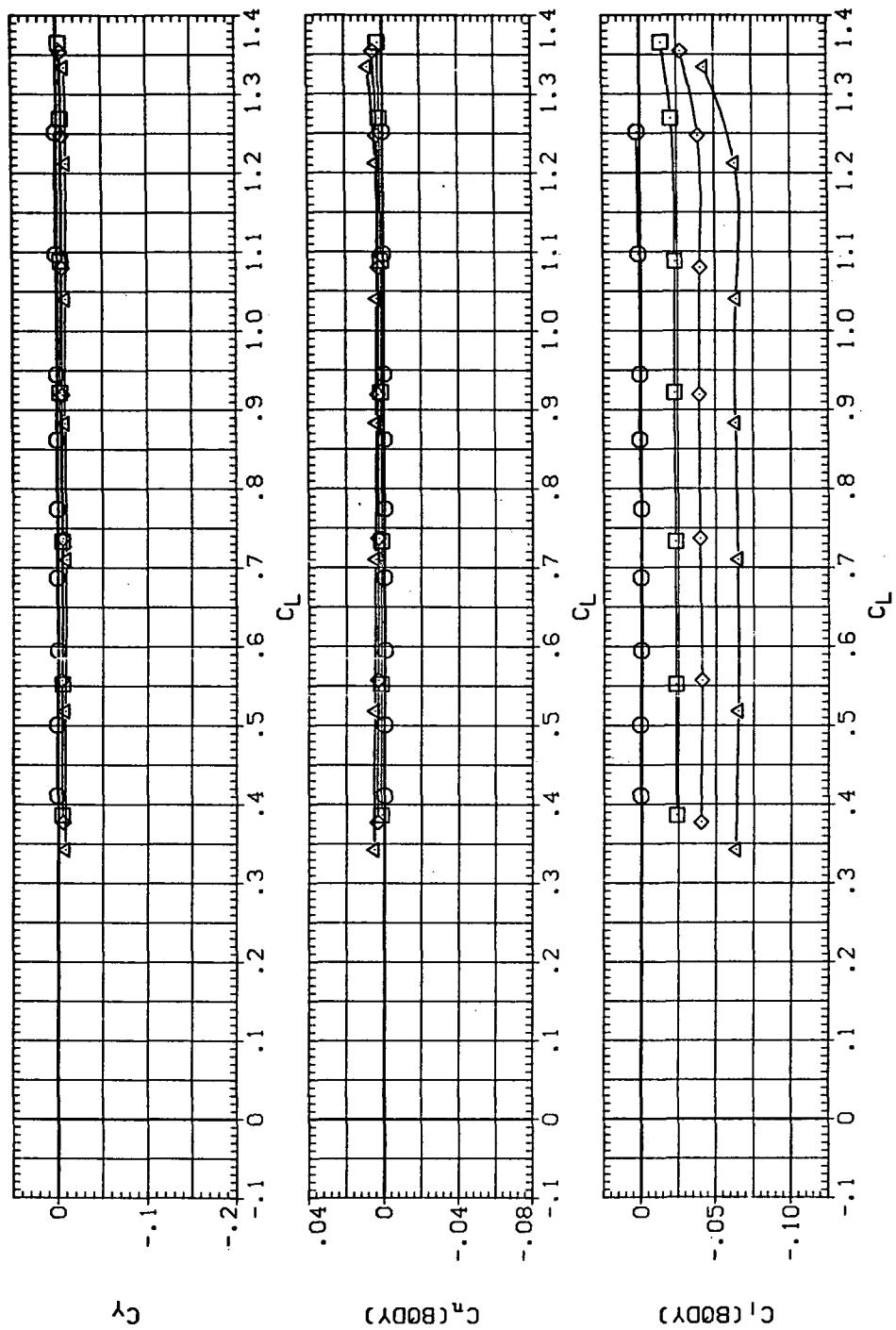
(d)  $L/D$  vs  $C_L$ 

Figure 21.—Continued.

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	RN/L	AIRRON
(RJ1008)	○	SWOB	8.200	-5.000
(RJL006)	□	SWOB LR-SA	8.200	-10.000
(RJL020)	×	SWOB LR-10A	8.200	-15.000
(RJL030)	×	SWOB LR-15A		



(e)  $C_Y$ ,  $C_n$ , and  $C_I$  vs  $C_L$

Figure 21.—Concluded.

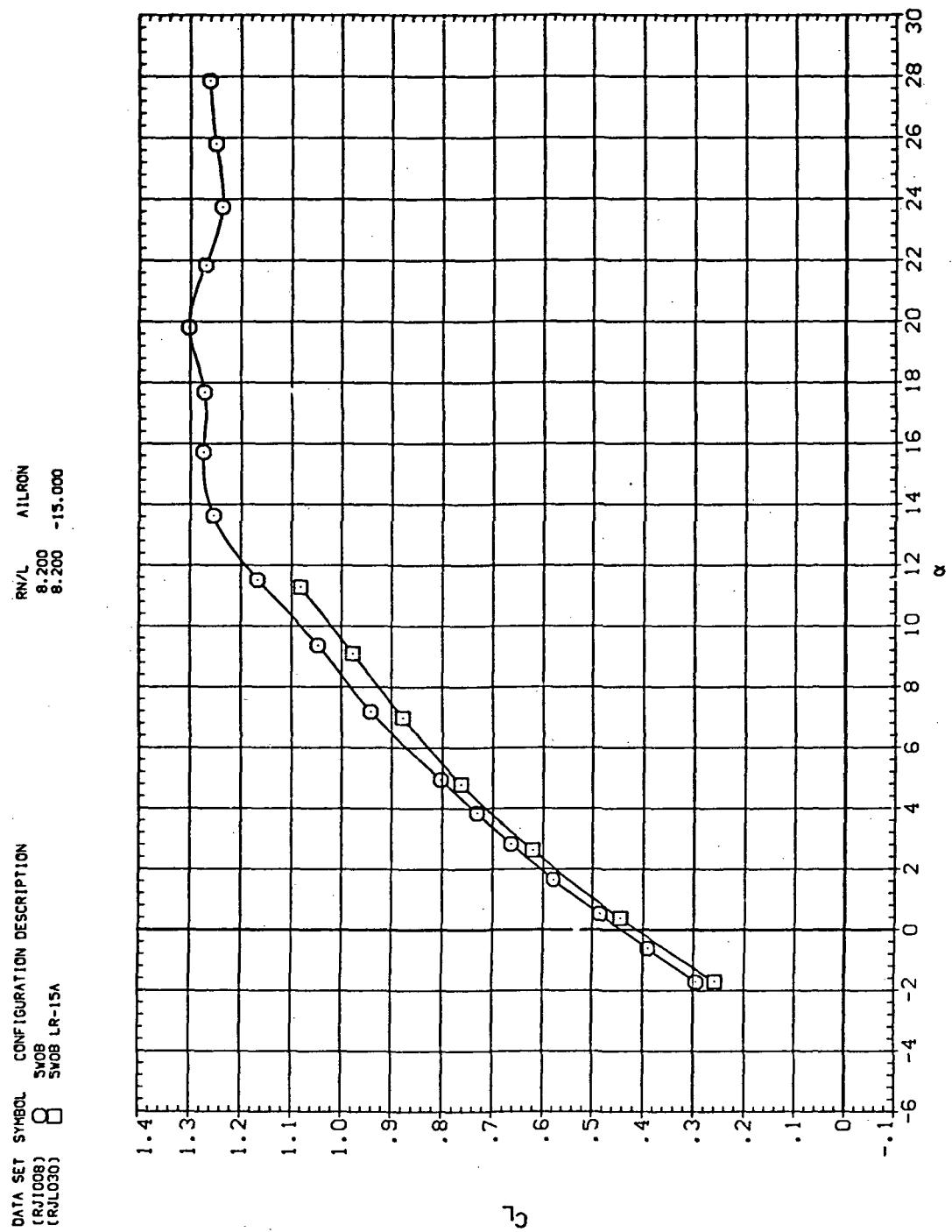
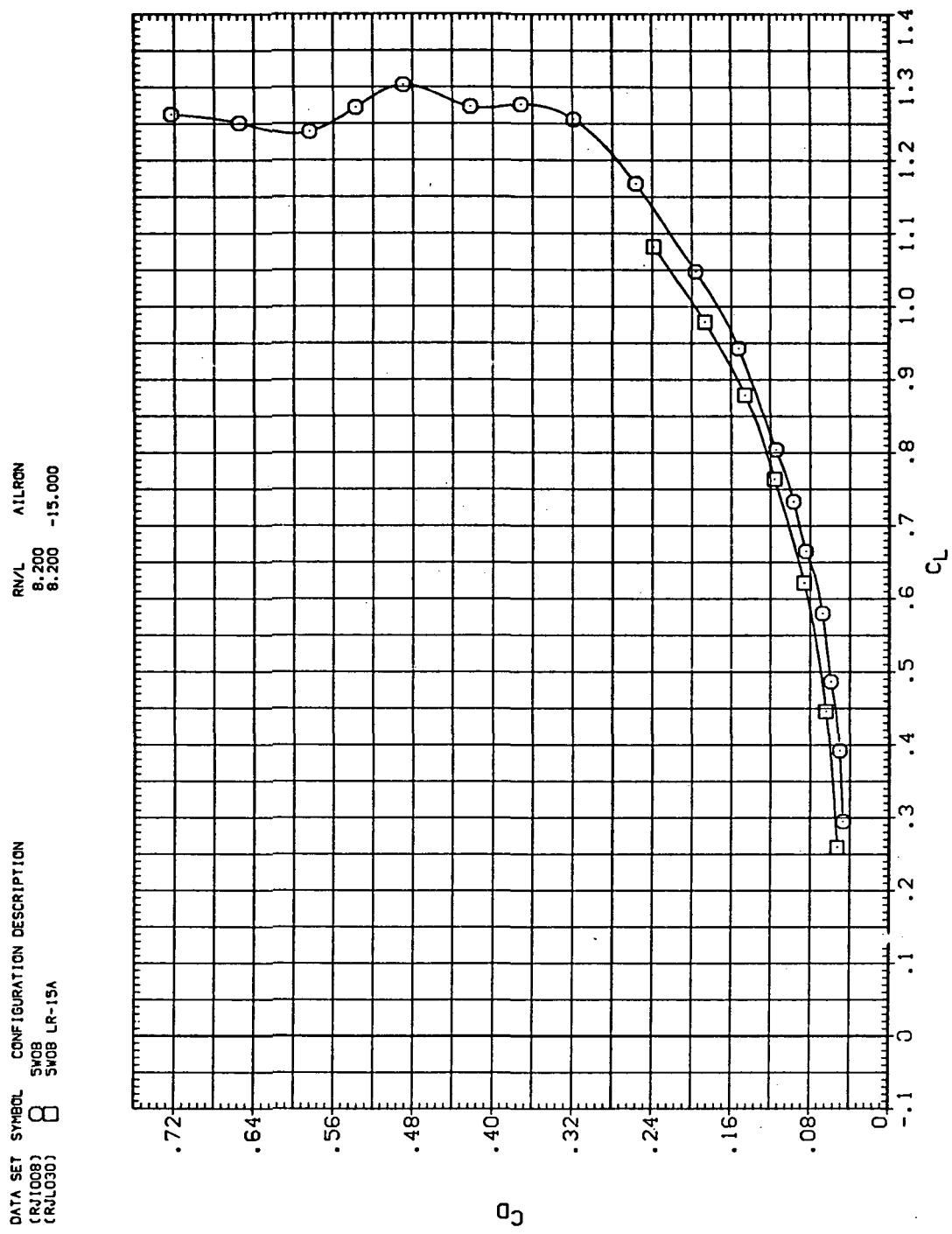


Figure 22.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 0, M = 0.80$ .



(b)  $C_D$  vs  $C_L$

Figure 22.—Continued.

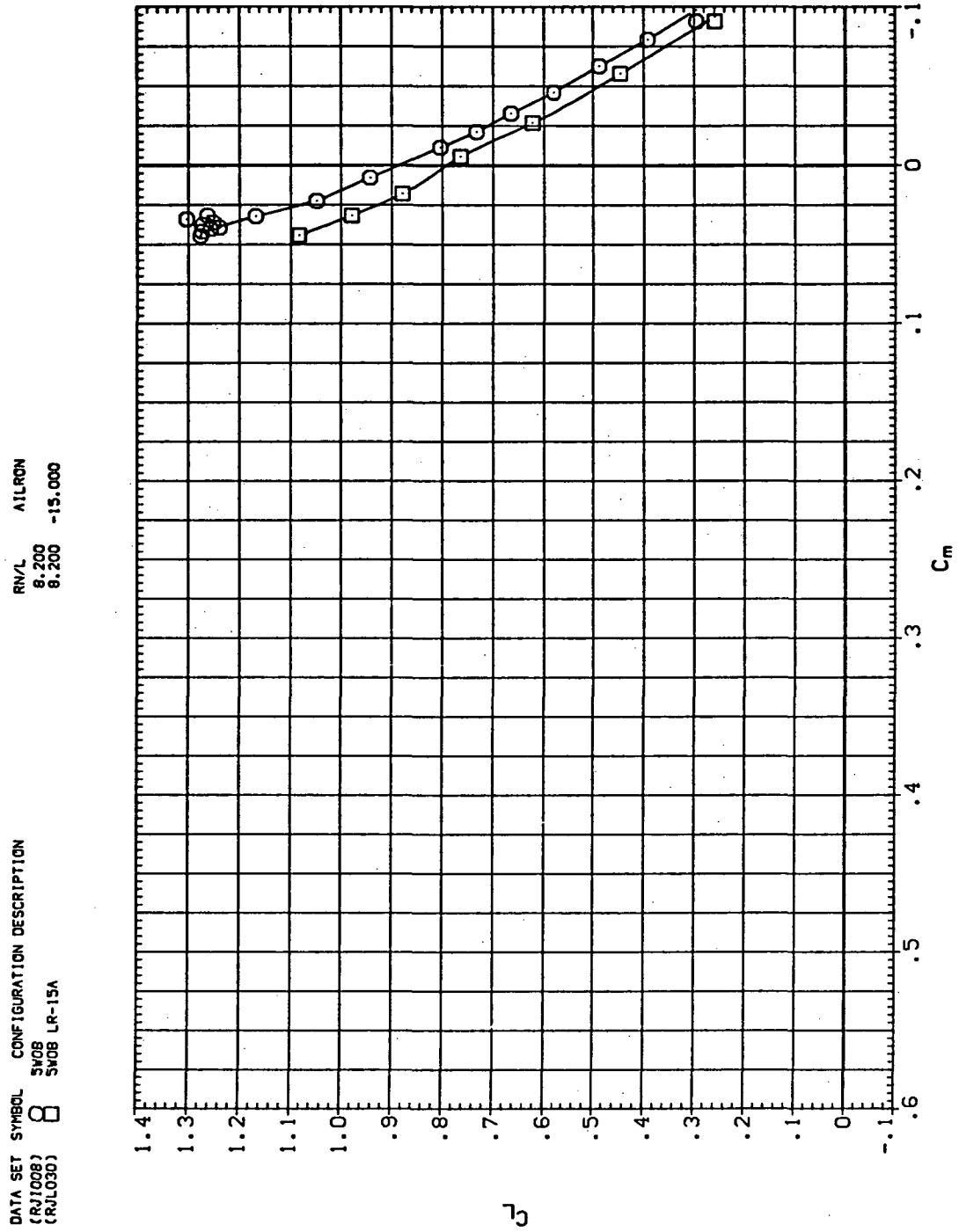
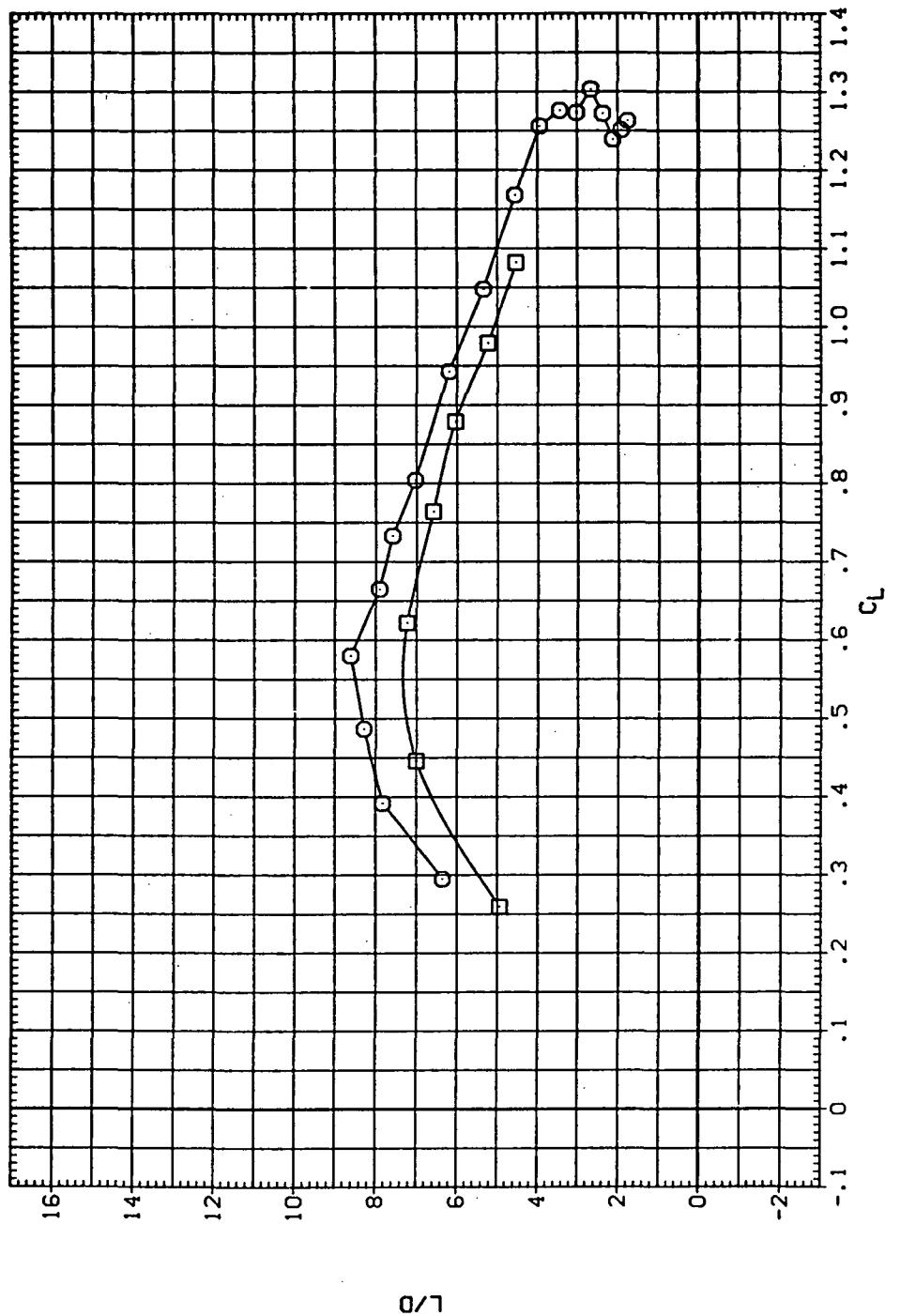
(c)  $C_L$  vs  $C_m$ 

Figure 22.— Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (RA1008) SvOB  
 (RA1030) SvOB LR-15A



(d)  $L/D$  vs  $C_L$

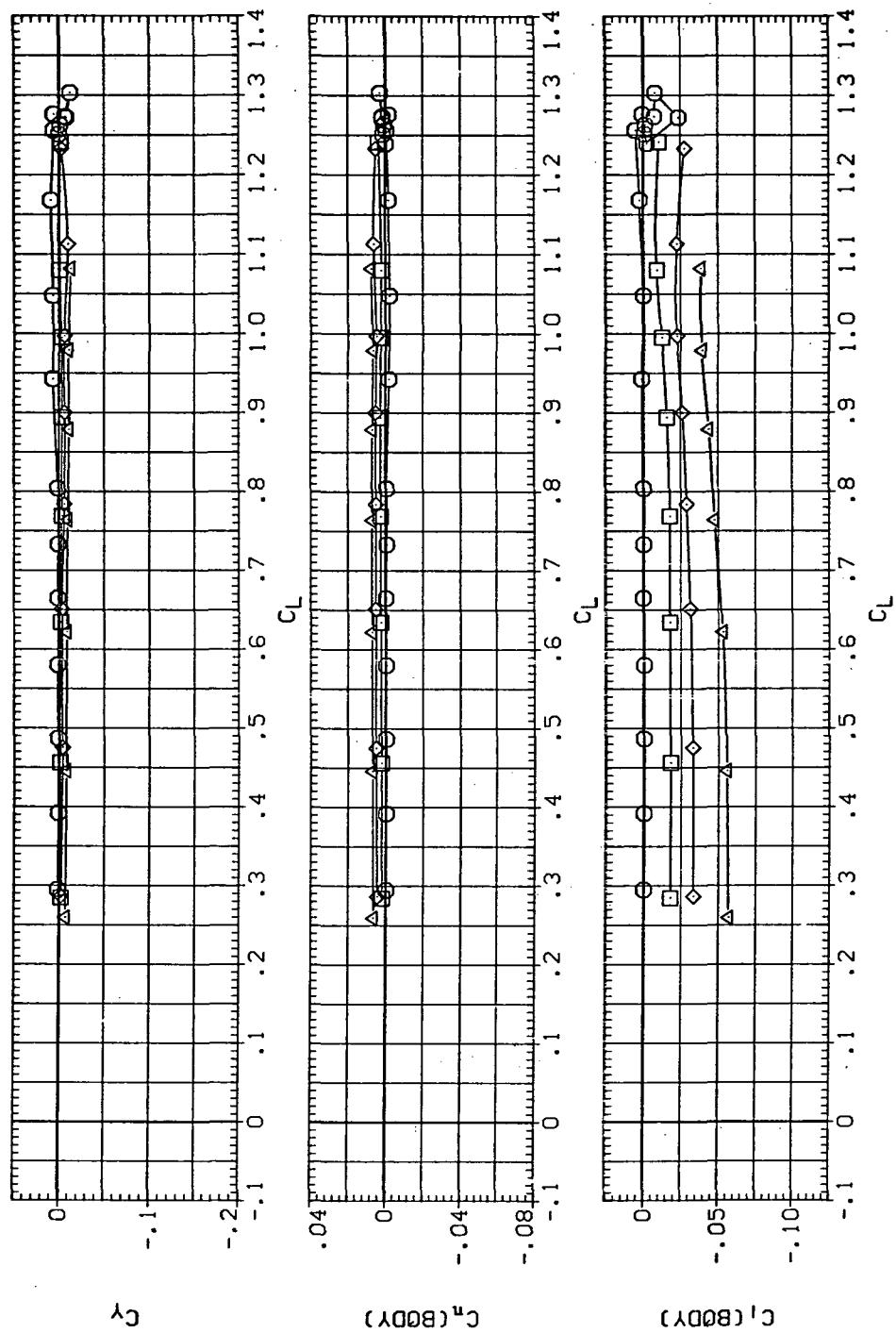
Figure 22.— Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RJ1008)		SWOB
(RJ1006)		SWOB LR-5A
(RJ1020)		SWOB LR-10A
(RJ1030)		SWOB LR-15A

RN/L AILRON

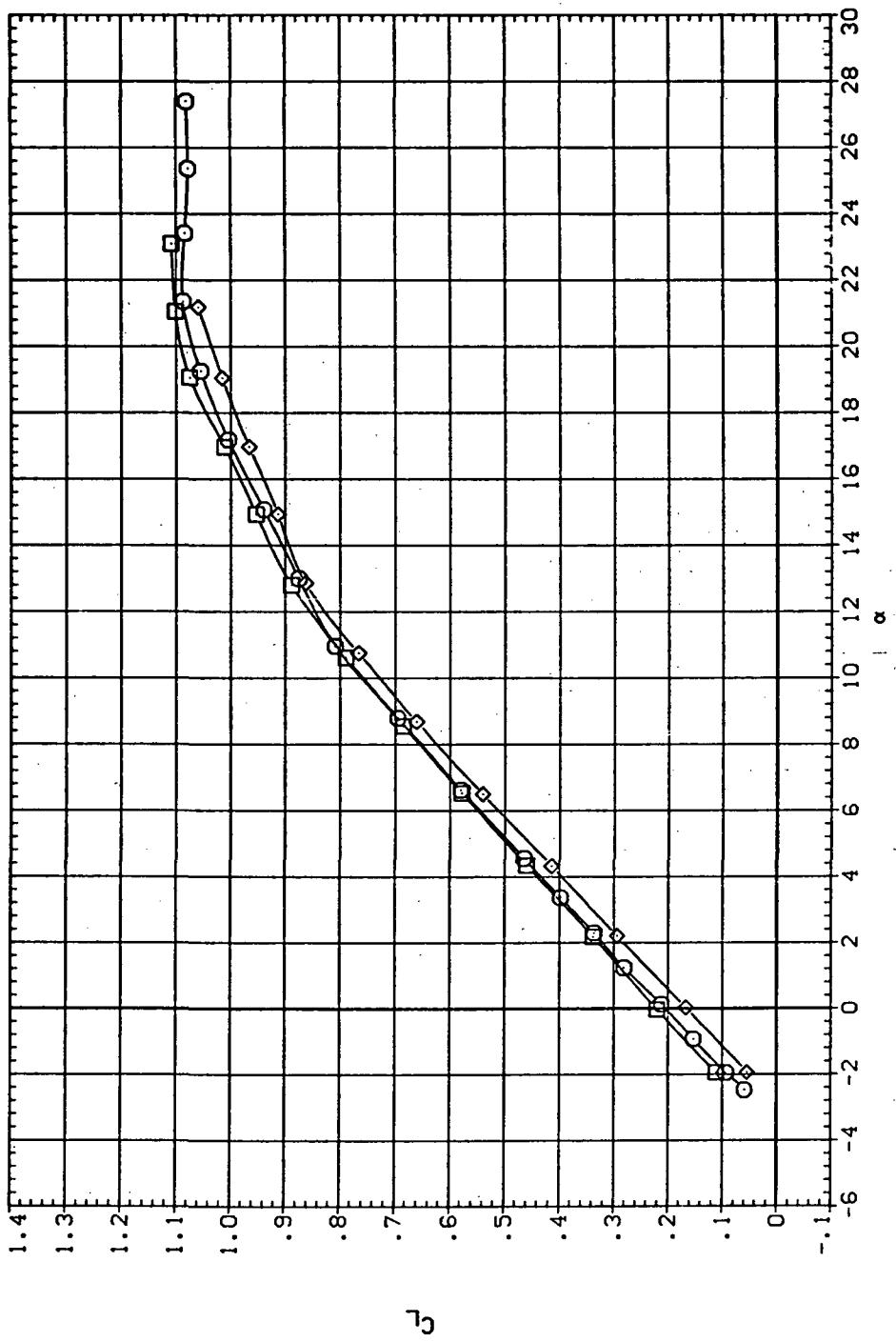
8.200	-5.000
8.200	-10.000
8.200	-15.000



(e)  $C_Y$ ,  $C_n$ , and  $C_I$  vs.  $C_L$

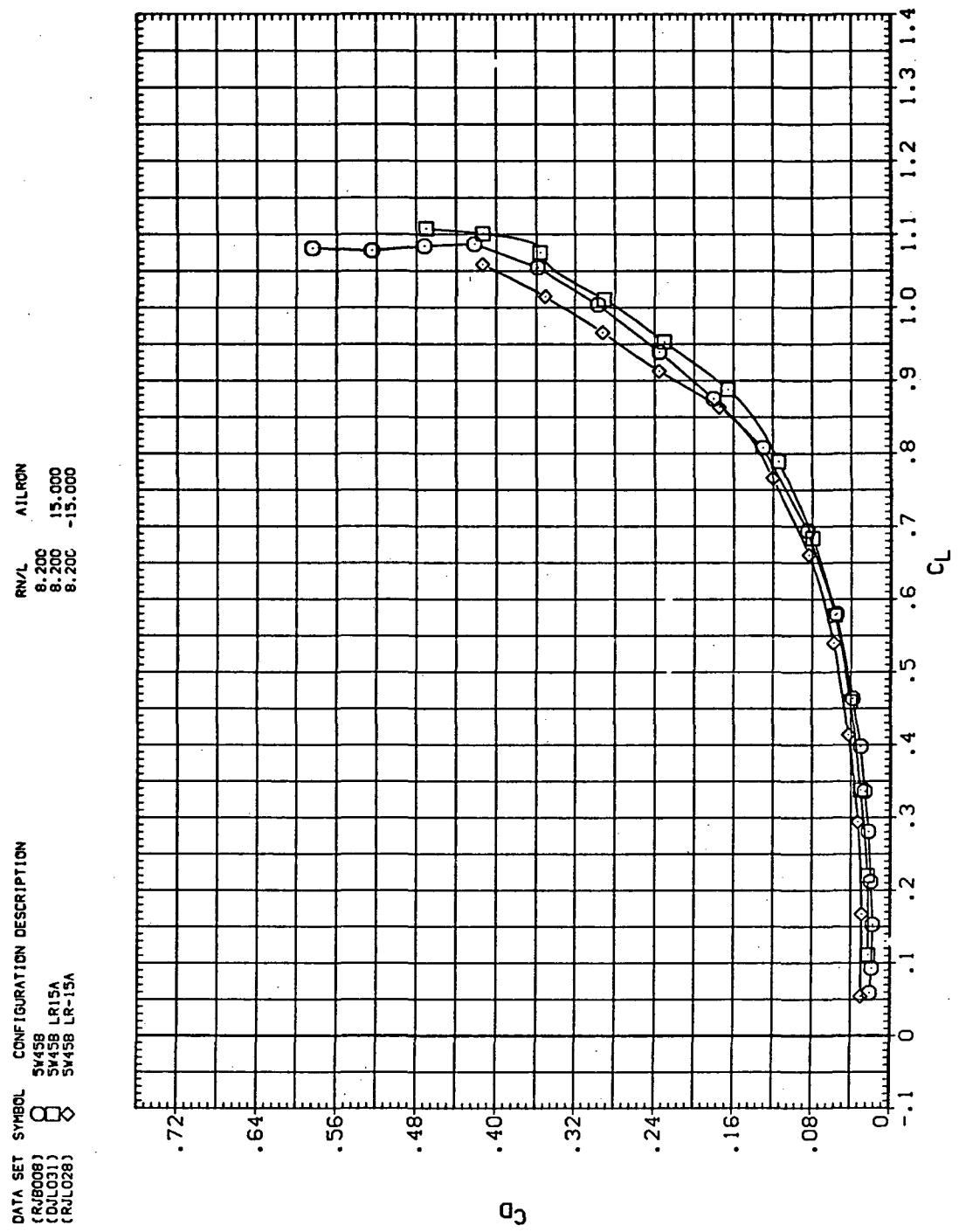
Figure 22.-- Concluded.

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(RJL008)	○	5V458
(RJL031)	◊	5V458 LR-15A
(RJL028)	□	5V458 LR-15A



(a)  $C_L$  vs  $\alpha$

Figure 23.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 45^\circ, M = 0.60.$



(b)  $C_D$  vs  $C_L$

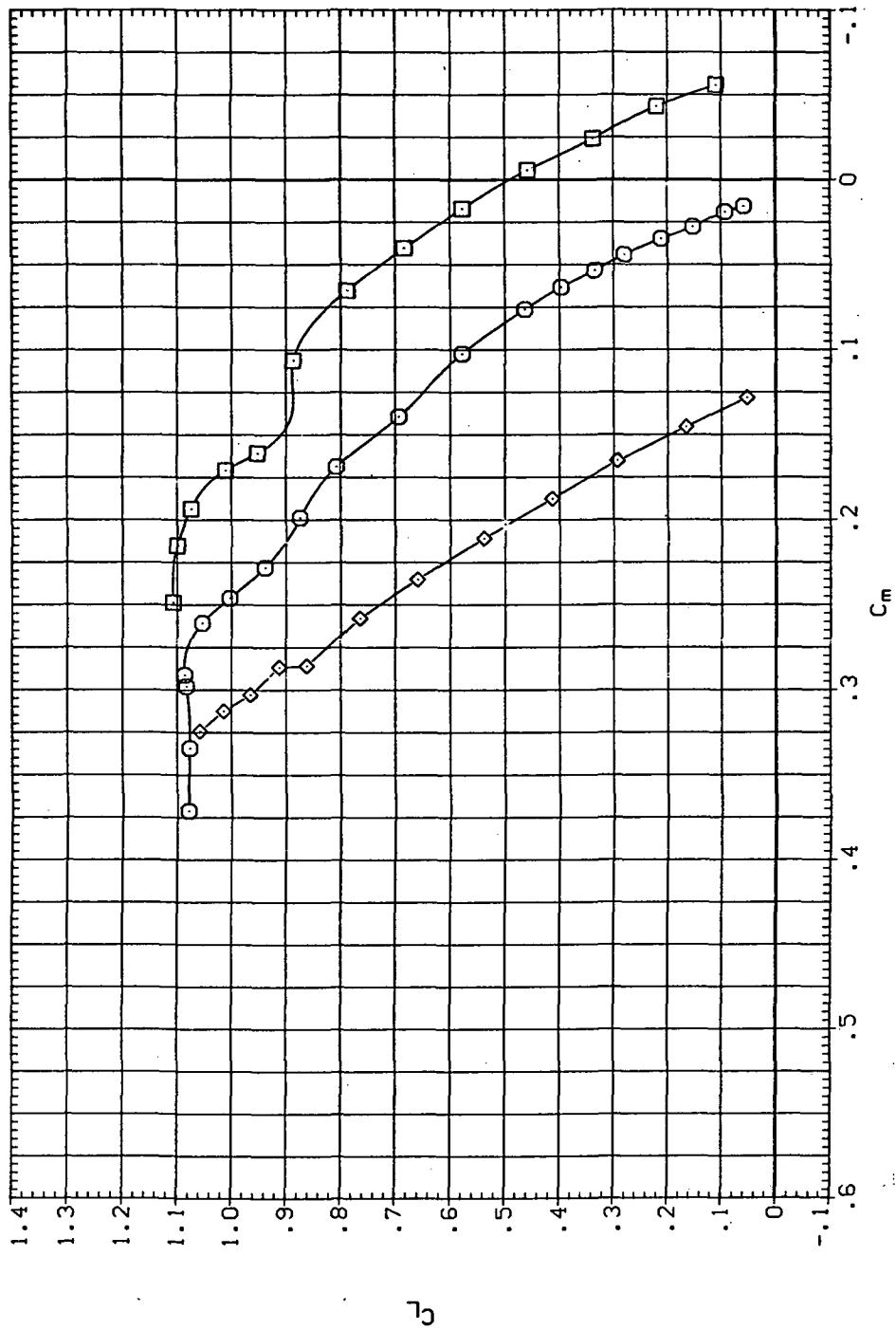
Figure 23.— Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CRB008)	○	SW45B	LR15A
(DOL031)	□	SW45B	LR15A
(CRJLQ28)	◊	SW45B	LR-15A

RNL AILRON

8.200	15,000
8.200	-15,000
8.200	



(c)  $C_L$  vs  $C_m$

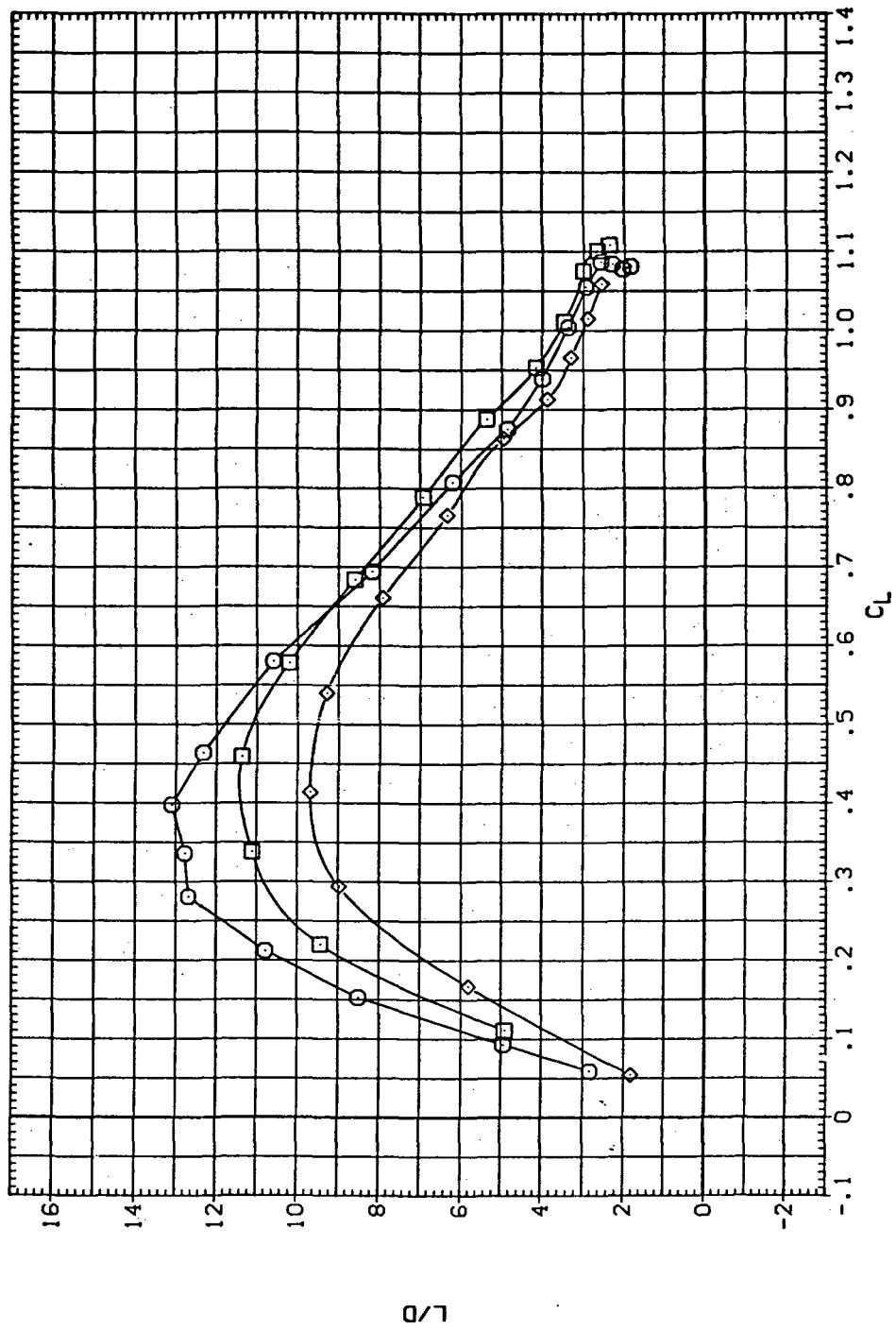
Figure 23.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RIB009)	$\circ$	SW45B	RN/L	AIRRON
(CUL001)	$\diamond$	SW45B LR-15A	8.200	15.000
(RLD028)	$\square$	SW45B LR-15A	8.200	-15.000

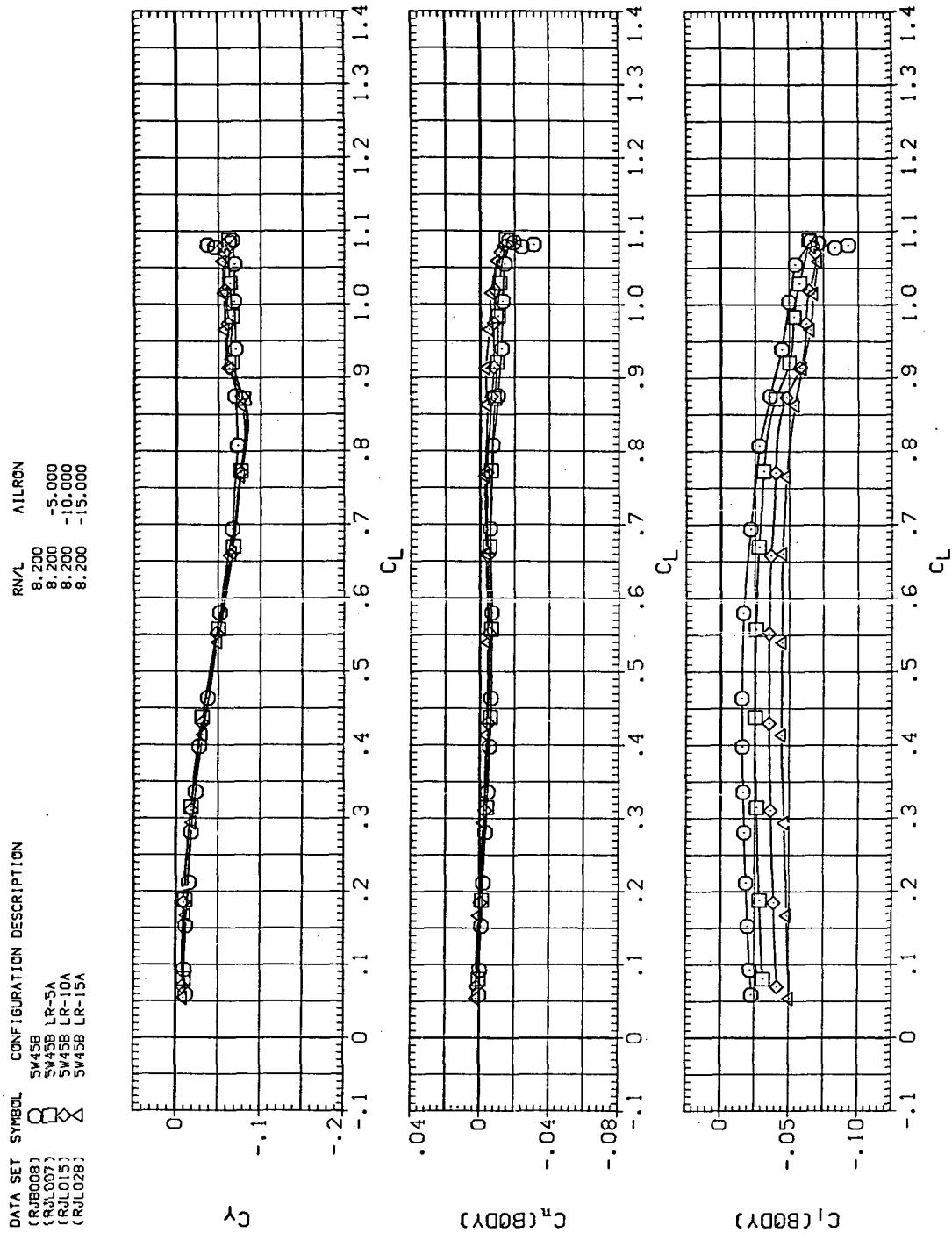
RN/L  
8.200  
8.200  
8.200

AIRRON  
15.000  
-15.000



(d)  $L/D$  vs  $C_L$

Figure 23.— Continued.



(e)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

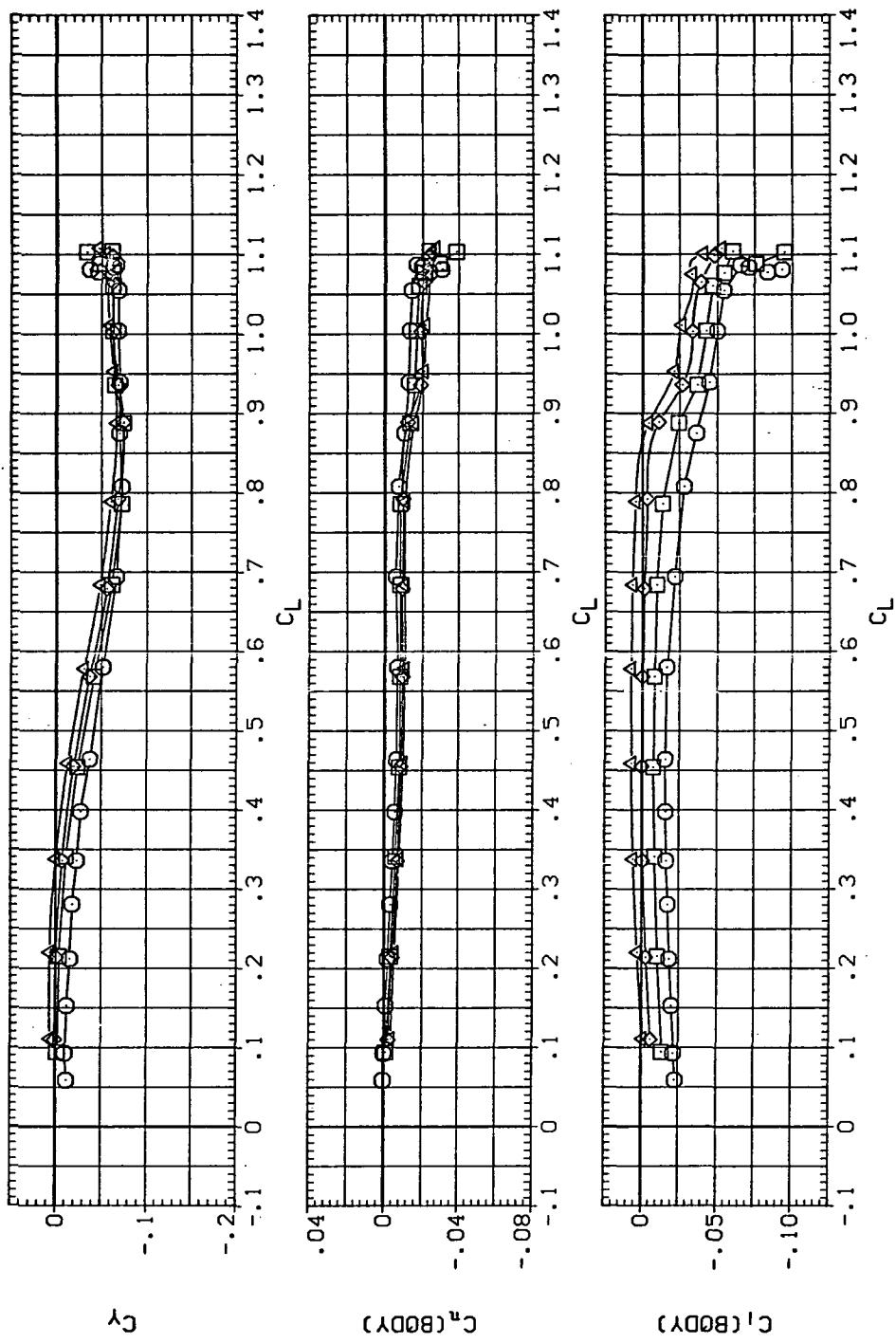
Figure 23.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

CRJBD08	○	SW45B
CRJL014	□	SW45B LESA
CRJL021	△	SW45B LR10A
CDJL031	△	SW45B LR15A

RN/L AILRON

8.200	5.000
8.200	10.000
8.200	15.000



(f)  $C_Y$ ,  $C_n$ , and  $C_L$  vs  $C_L$  (positive  $\Delta\delta_a$ 's).

Figure 23.-- Concluded.

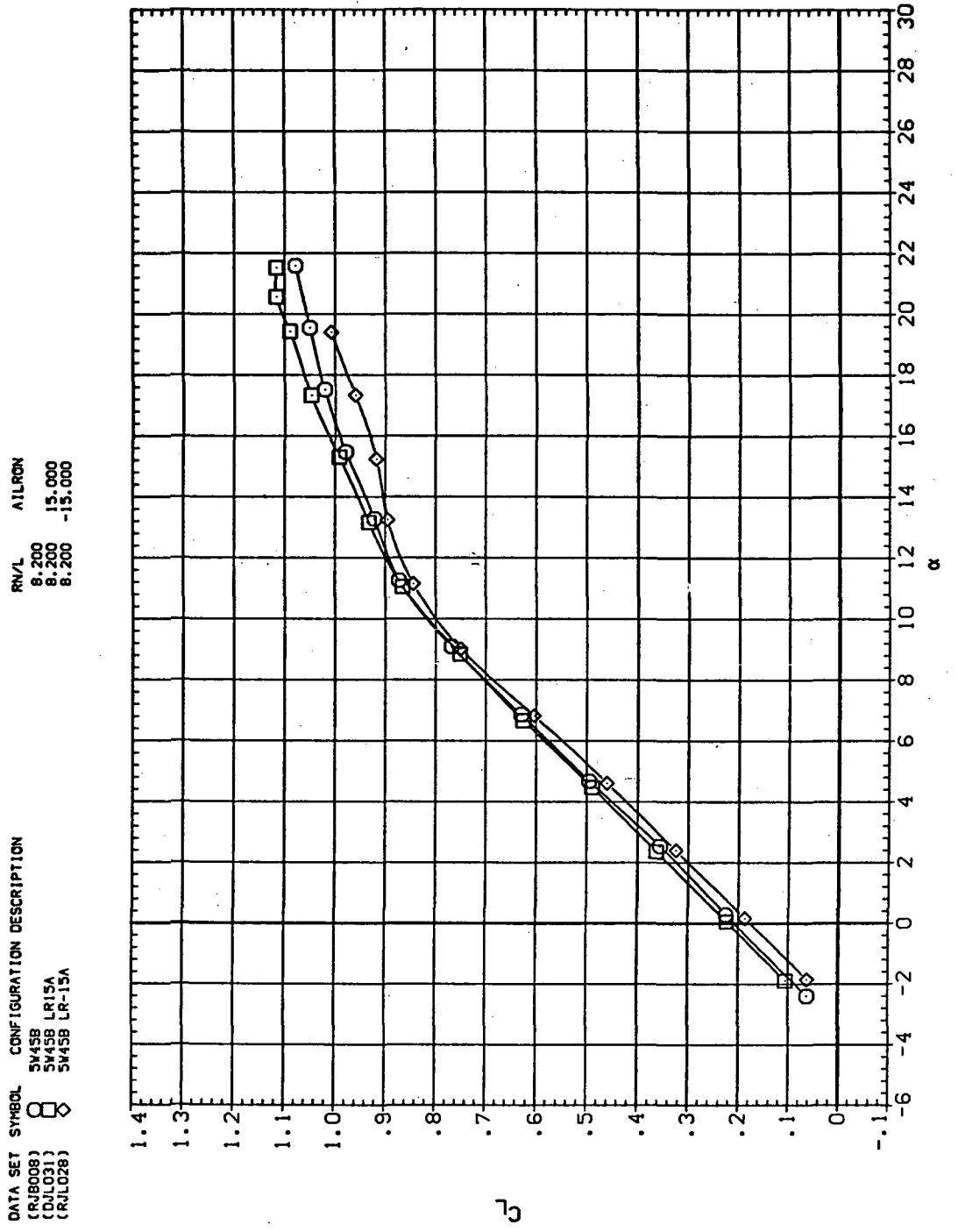
(a)  $C_L$  vs  $\alpha$ 

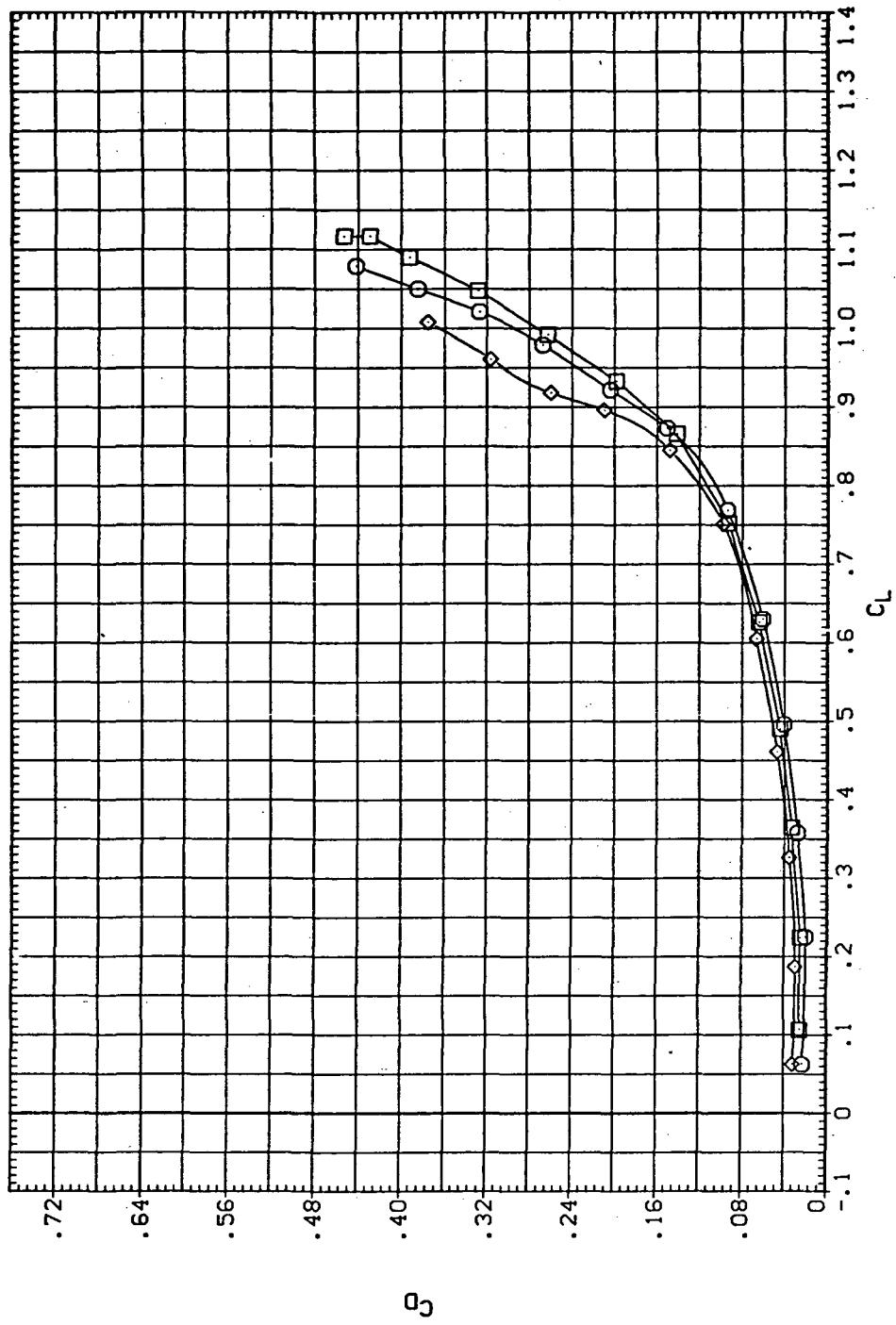
Figure 24.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 45^\circ, M = 0.80.$

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RJL008)	○	SW45B
(DJL031)	□	SW45B LR-15A
(RJL028)	◇	SW45B LR-15B

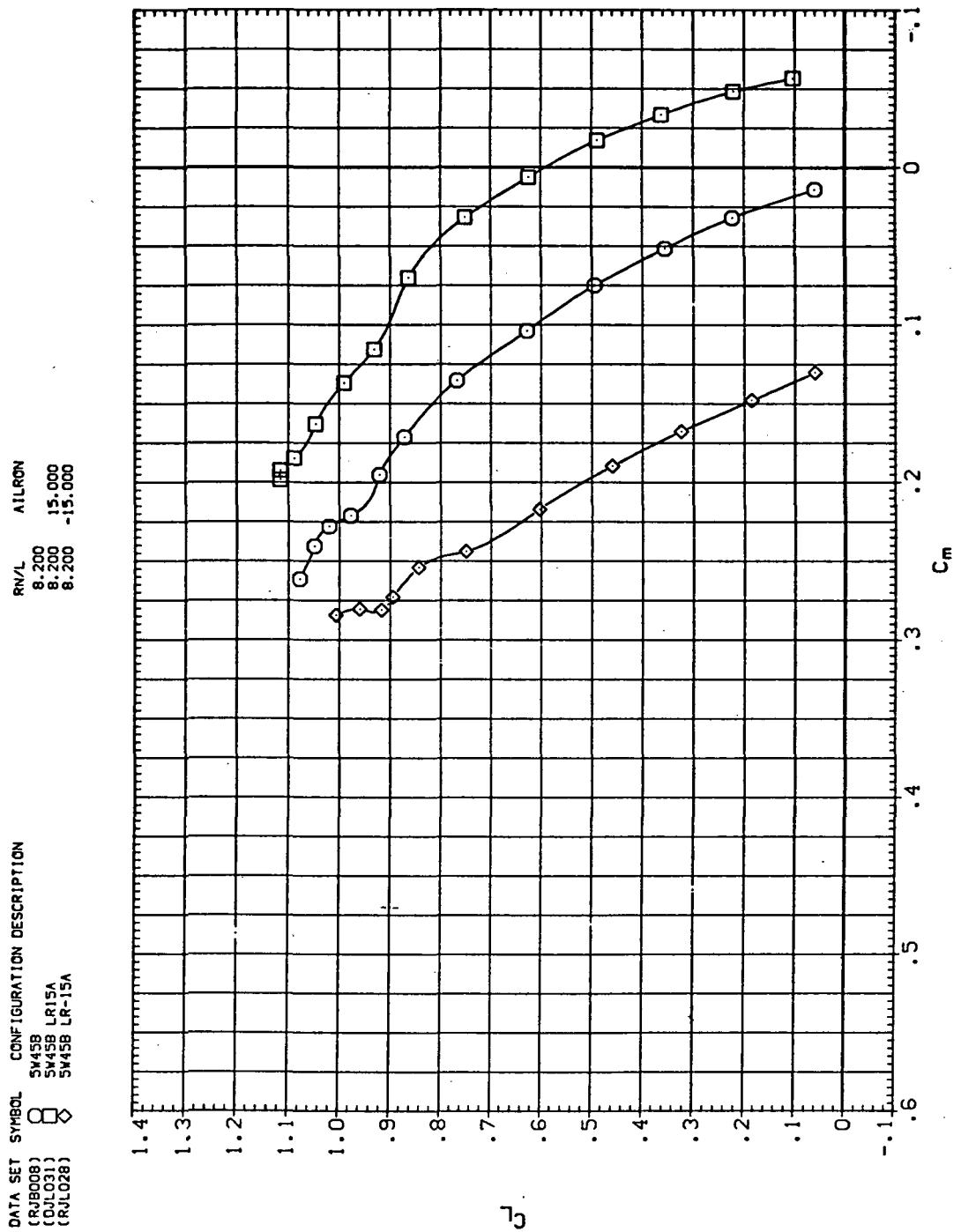
RN/L AILRDN

8.200	15.000
8.200	-15.000
8.200	



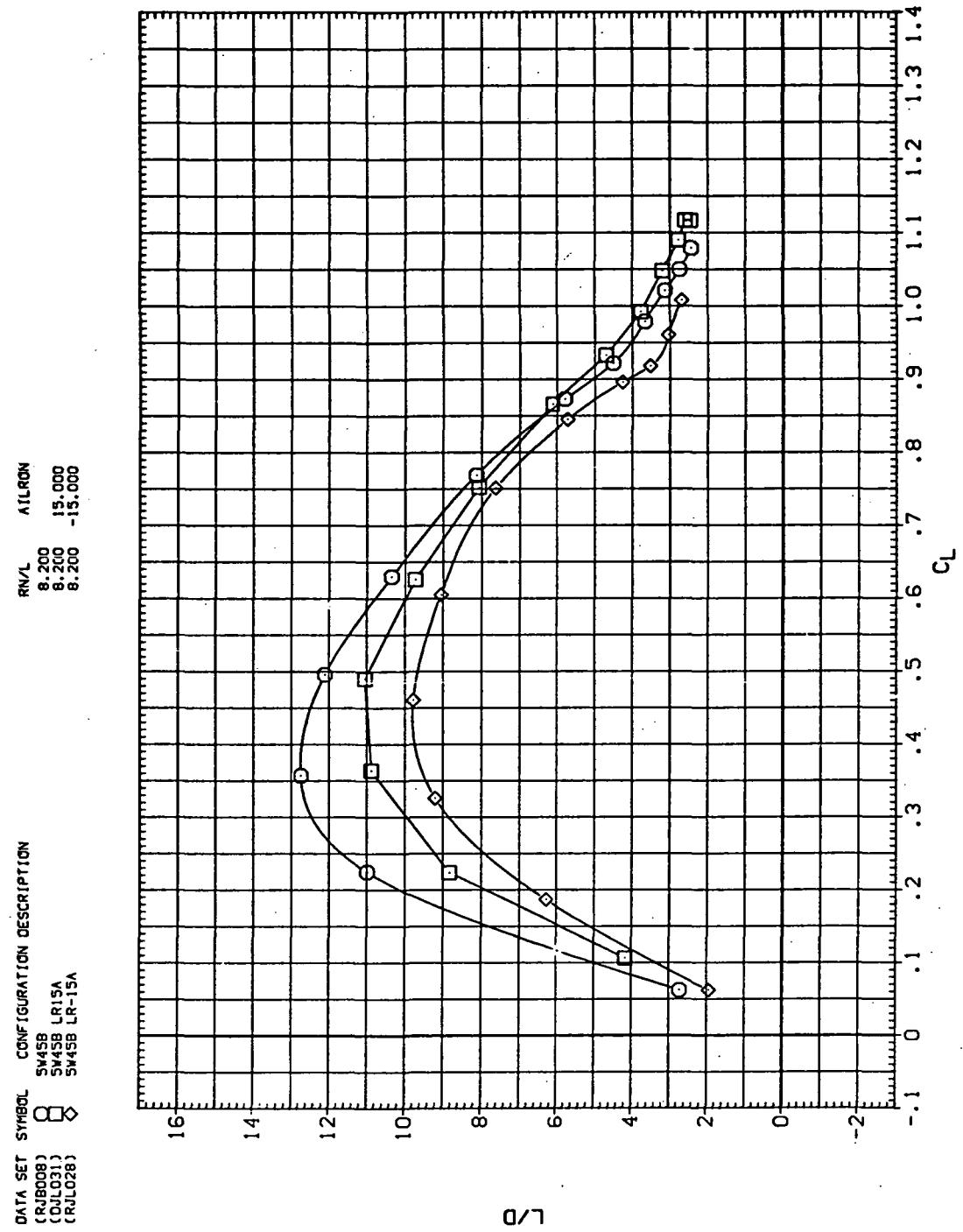
(b)  $C_D$  vs.  $C_L$

Figure 24.—Continued.



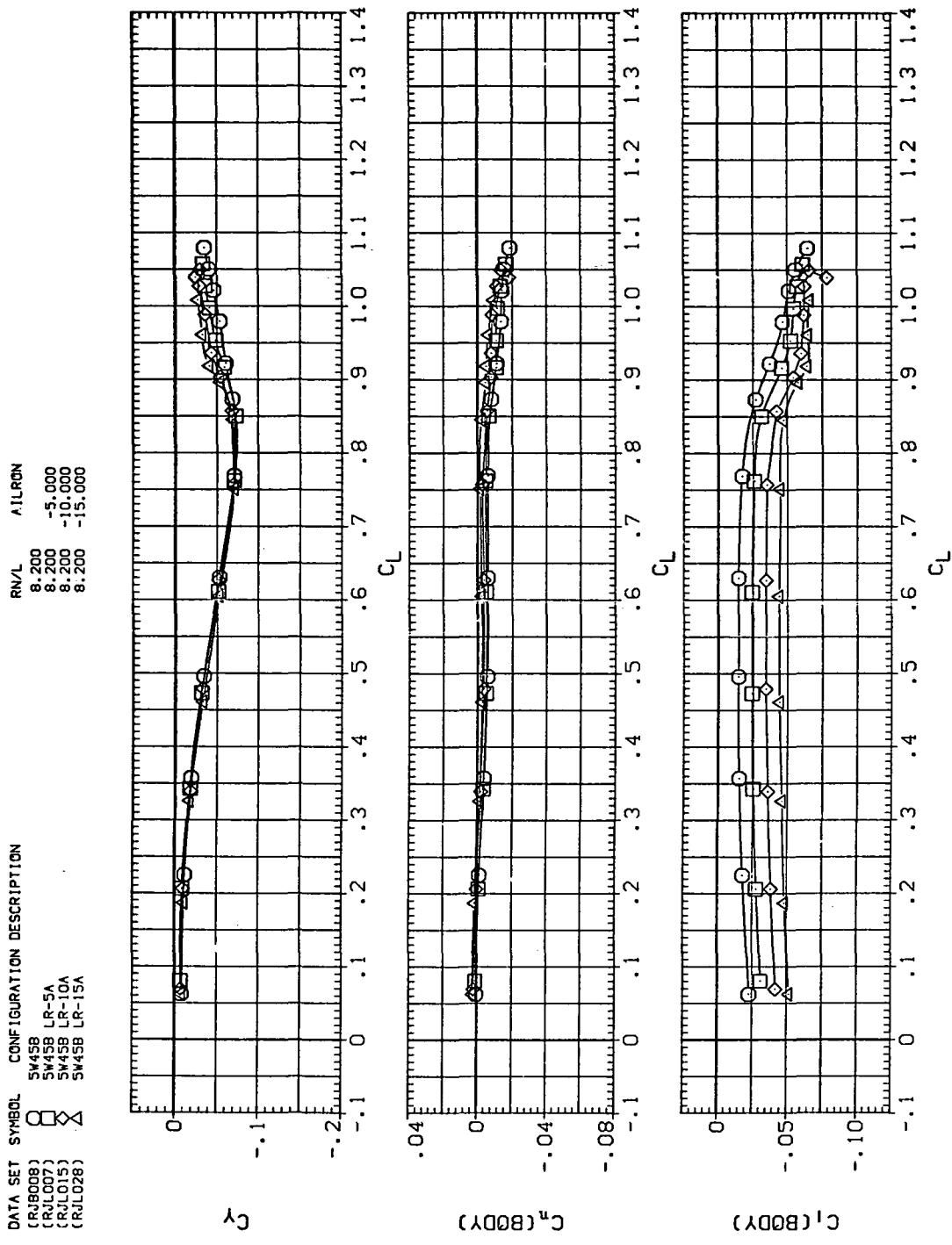
(c)  $C_L$  vs  $C_m$

Figure 24.—Continued.



(d)  $L/D$  vs  $C_L$

Figure 24.—Continued.



(e)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

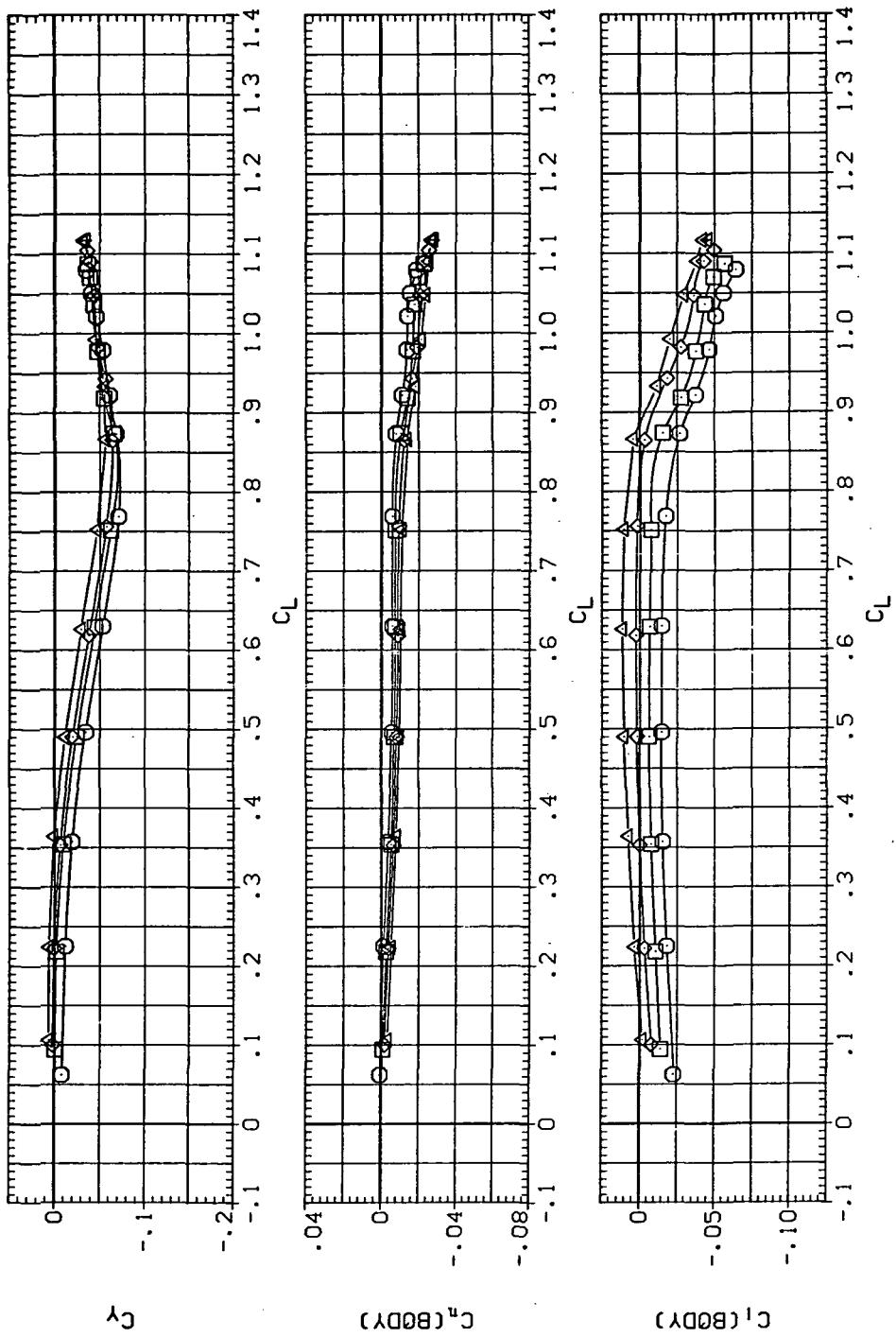
Figure 24.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RJL008)	O	SM45B	RN/L	AIRRON
(RJL014)	□	SM45B L55A	8.200	5.000
(RJL021)	◇	SM45B LR10A	8.200	10.000
(DJL031)	△	SM45B LR15A	8.200	15.000

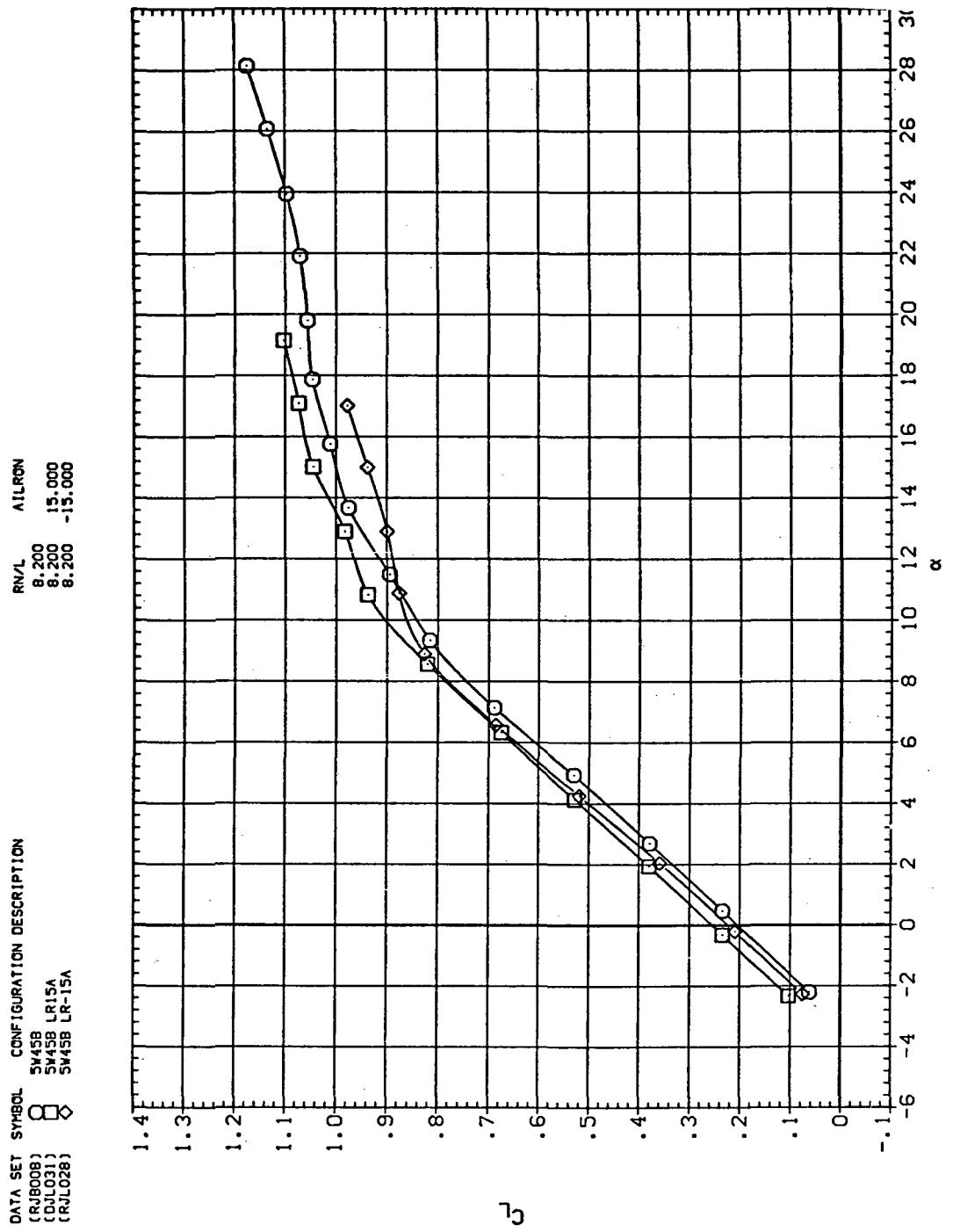
RN/L AIRRON

8.200	5.000
8.200	10.000
8.200	15.000



(f)  $C_Y$ ,  $C_n$ , and  $C_L$  vs  $C_L$  (positive  $\Delta\delta_a$ 's).

Figure 24.— Concluded.

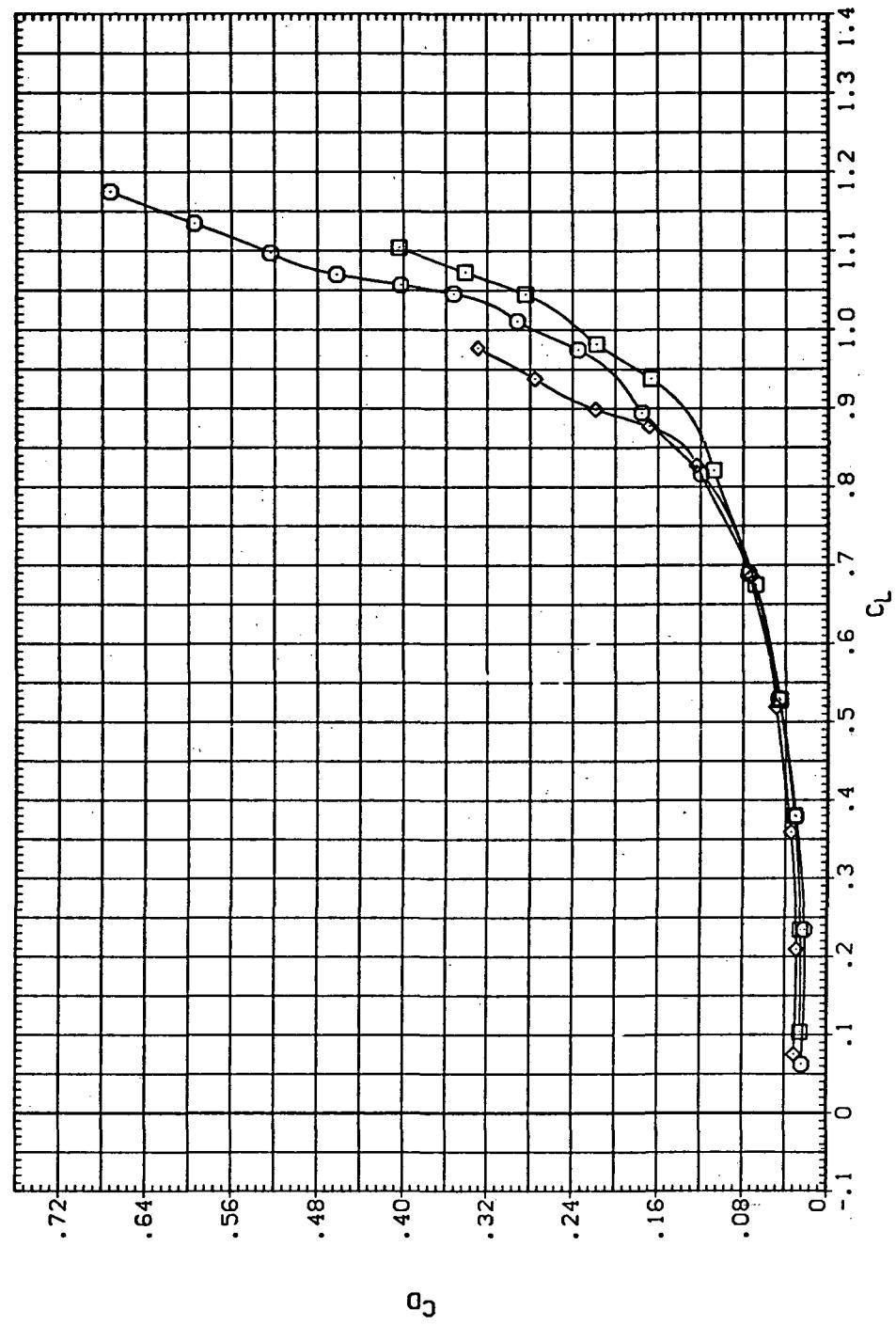


(a)  $C_L$  vs  $\alpha$

Figure 25.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 45^\circ, M = 0.90.$

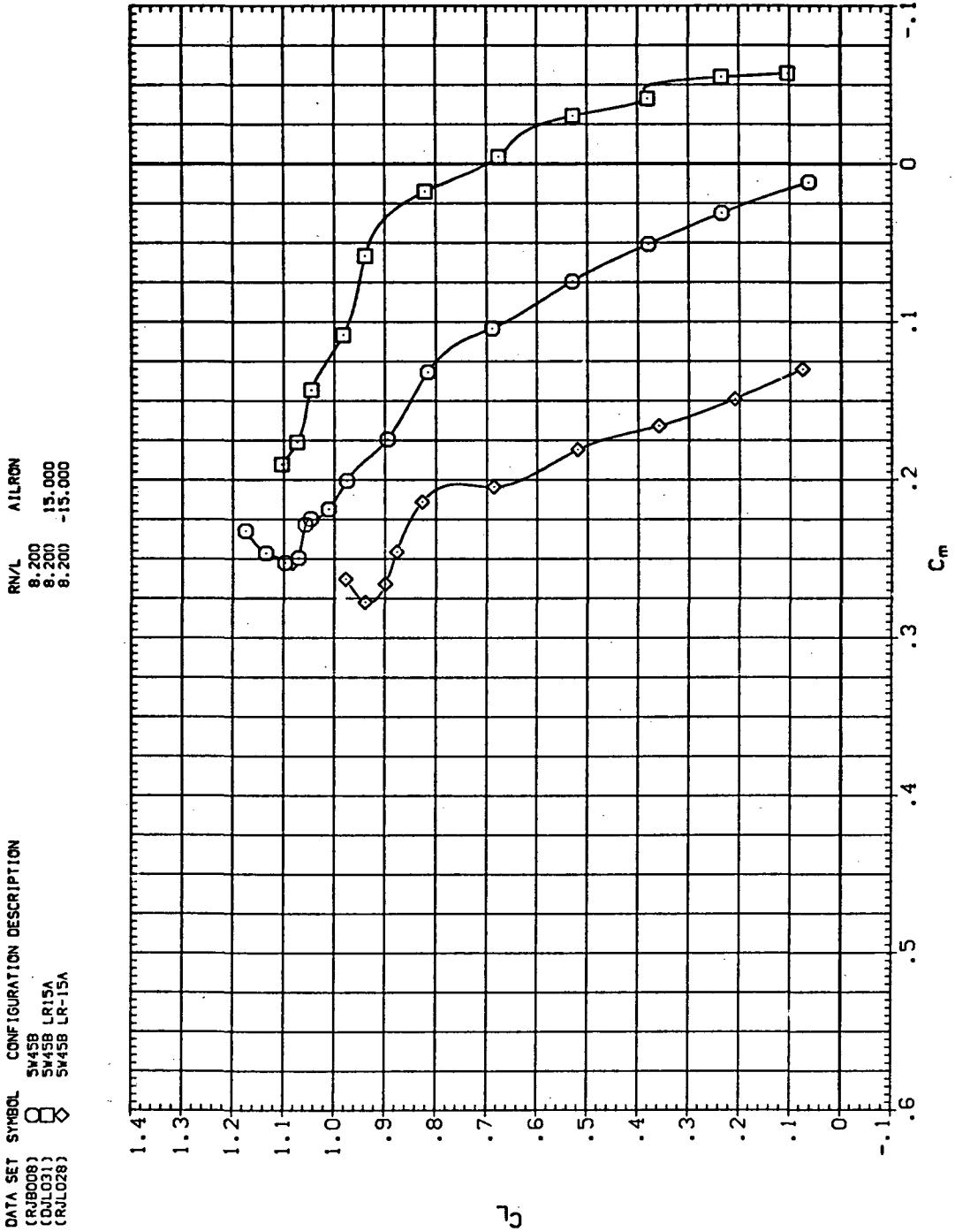
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(RB008)	$\circ$	SW45B
(DL031)	$\diamond$	SW45B LR15A
(RJL028)	$\square$	SW45B LR-15A

RN/L AILRON  
8.200 15.000  
8.200 -15.000



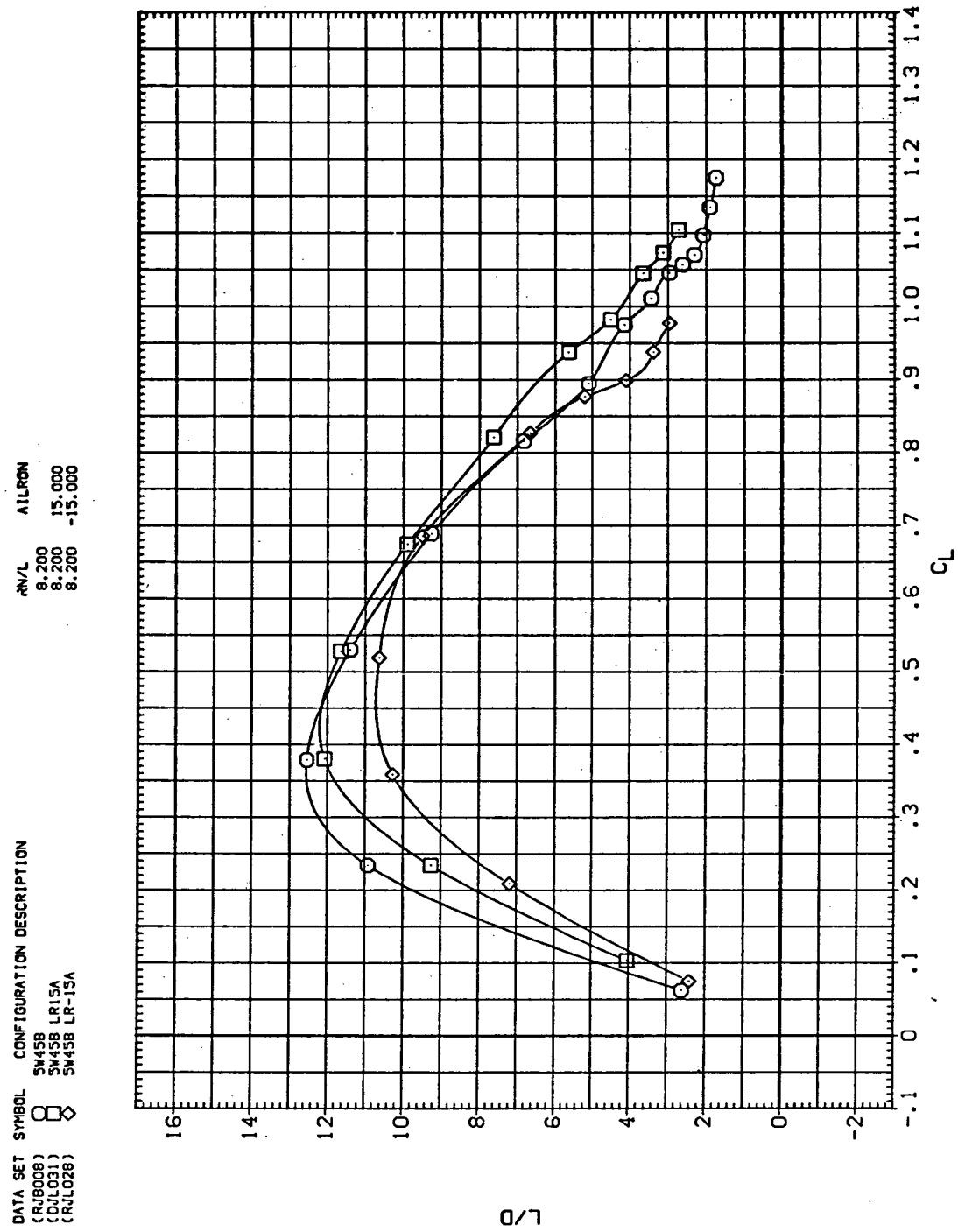
(b)  $C_D$  vs  $C_L$

Figure 25.—Continued.



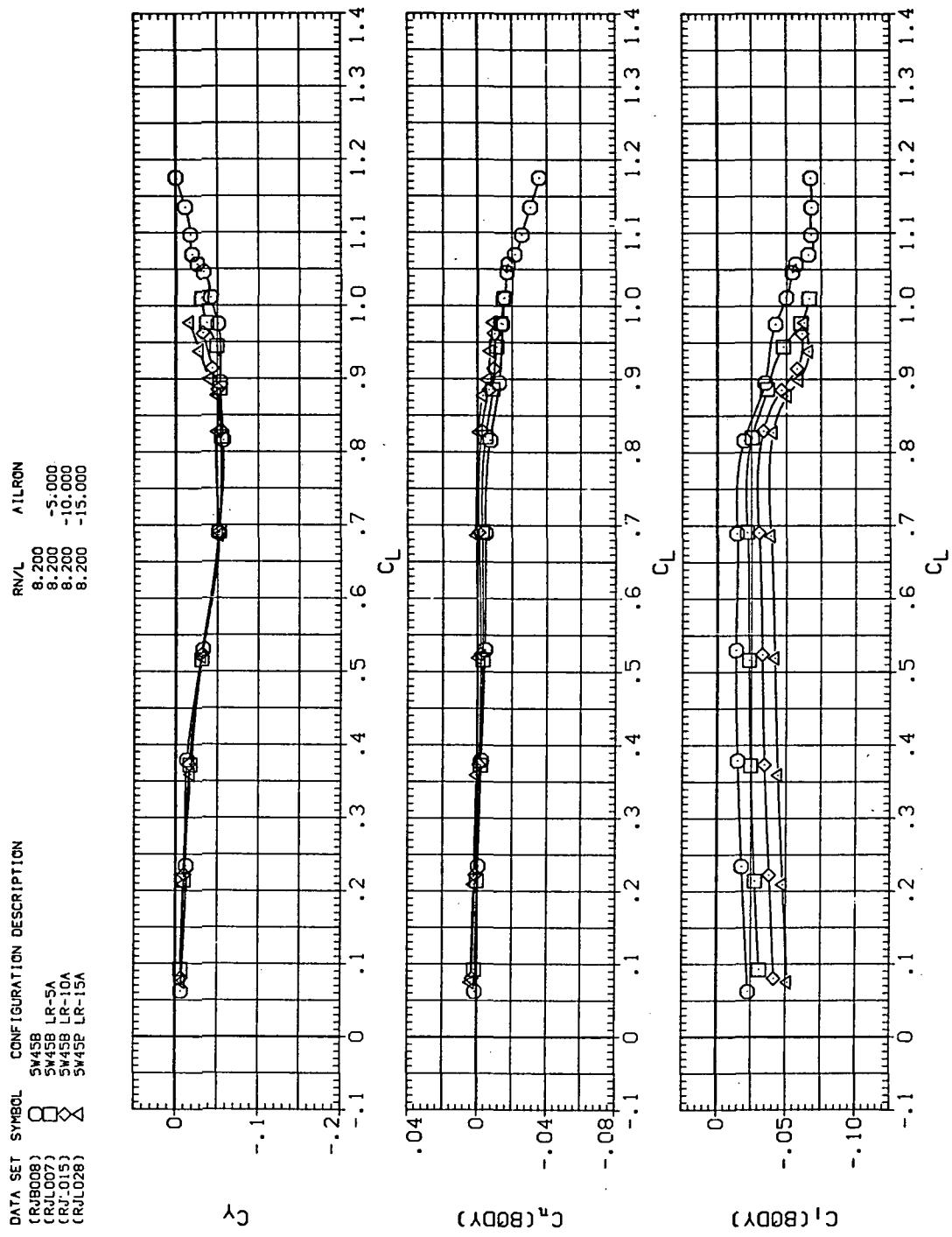
(c)  $C_L$  vs  $C_m$

Figure 25.—Continued.



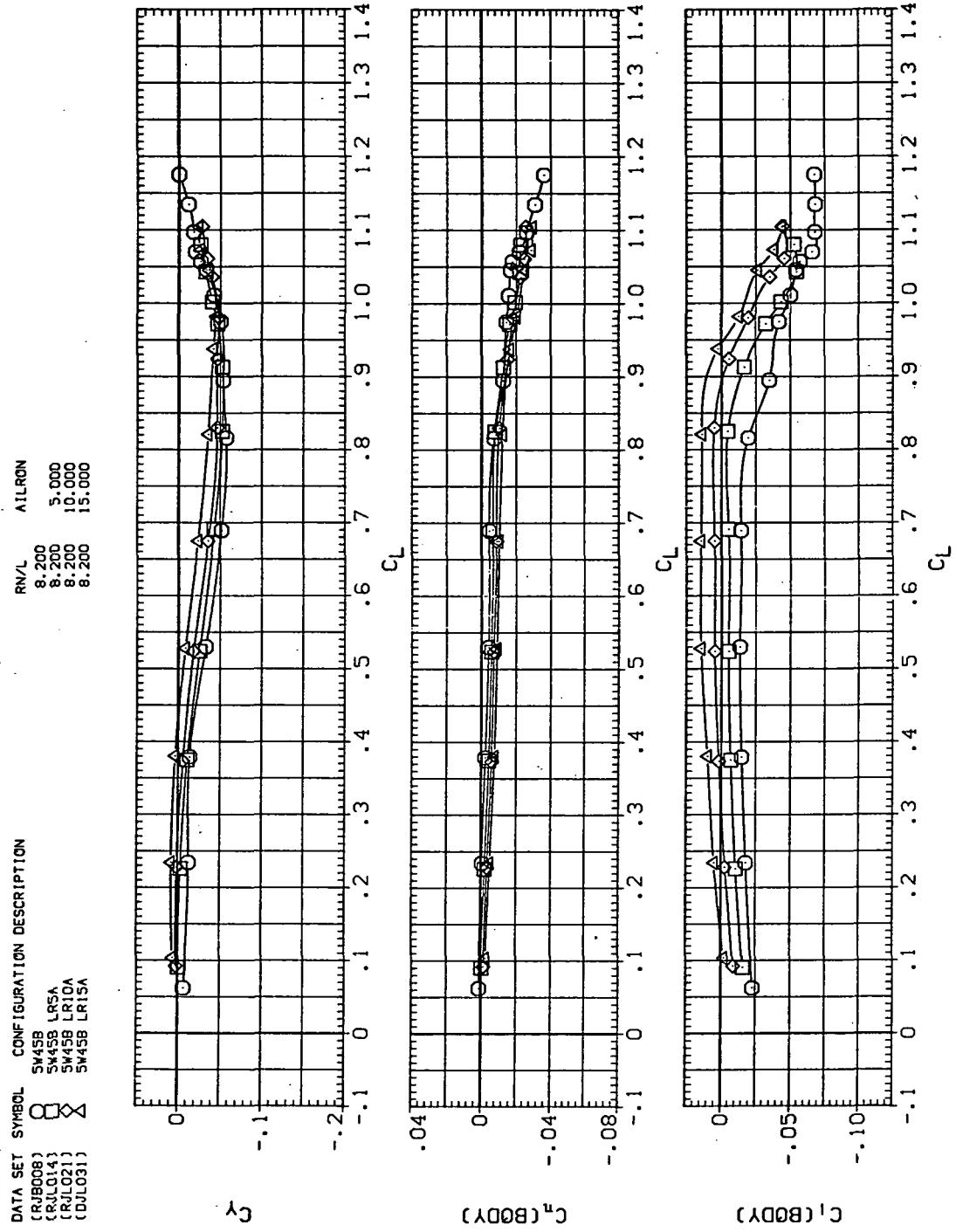
(d)  $L/D$  vs  $C_L$

Figure 25.— Continued.



(e)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

Figure 25.—Continued.



(f)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (positive  $\Delta\delta_a$ 's).

Figure 25.— Concluded.

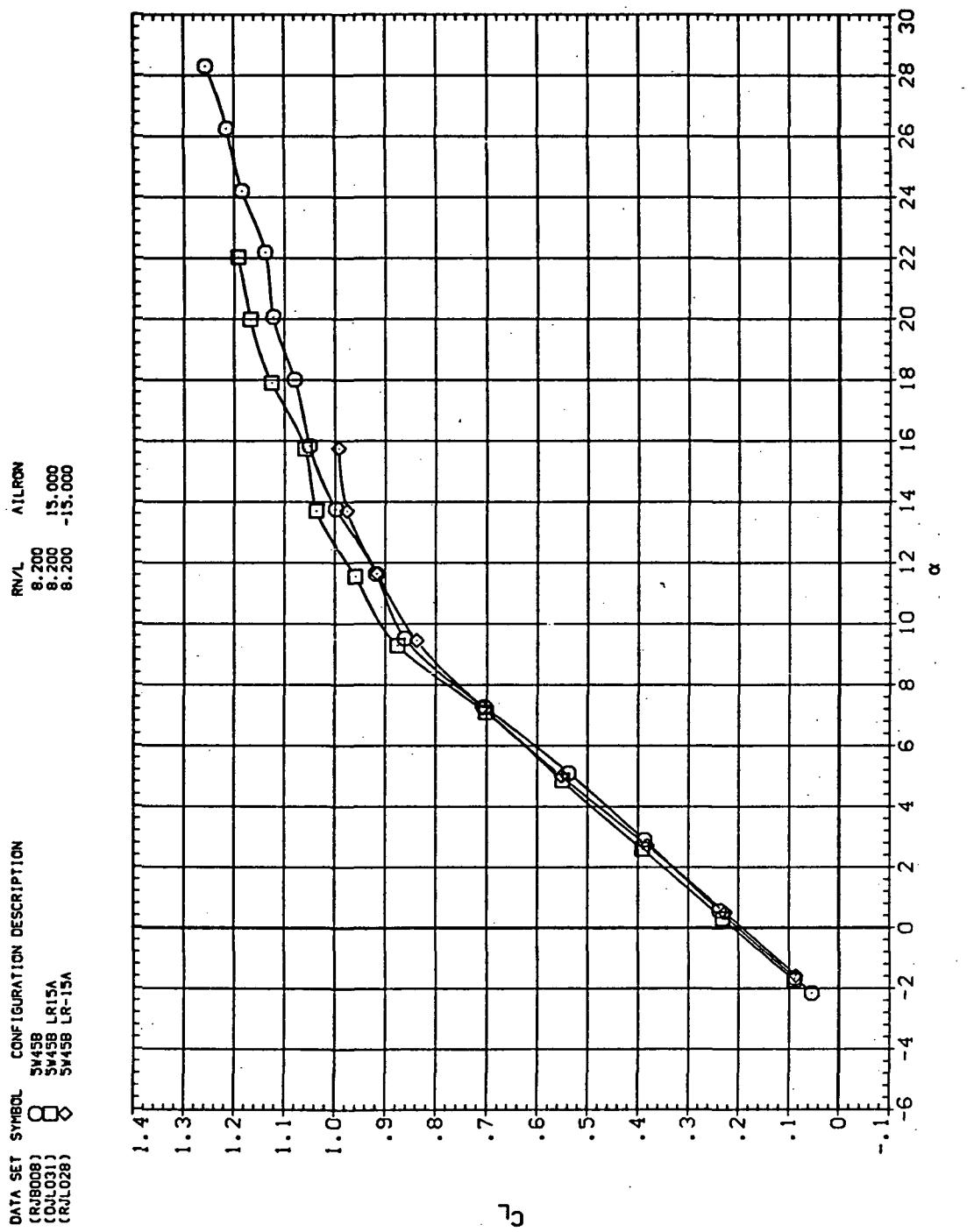
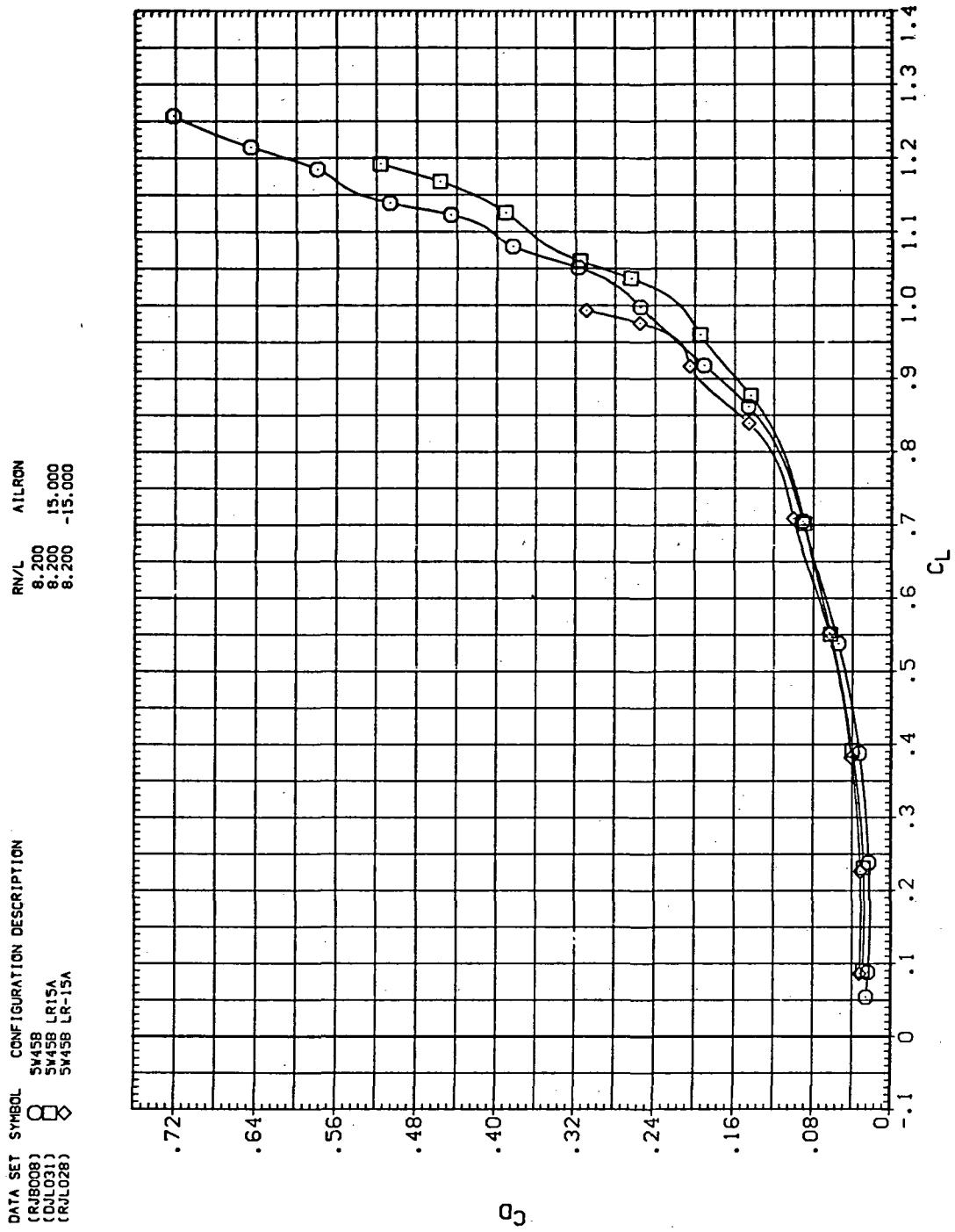
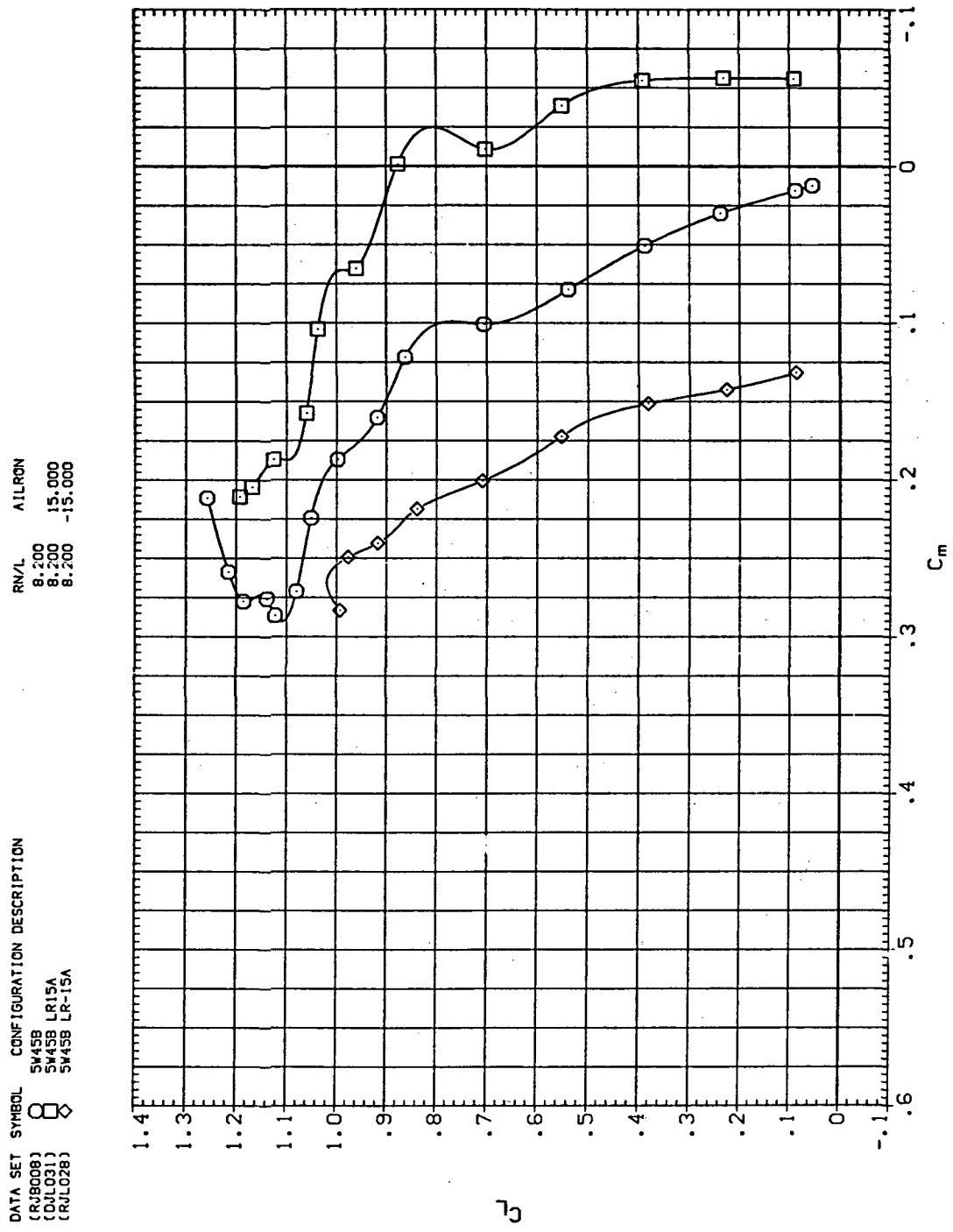
(a)  $C_L$  vs  $\alpha$ 

Figure 26.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 45^\circ, M = 0.95.$



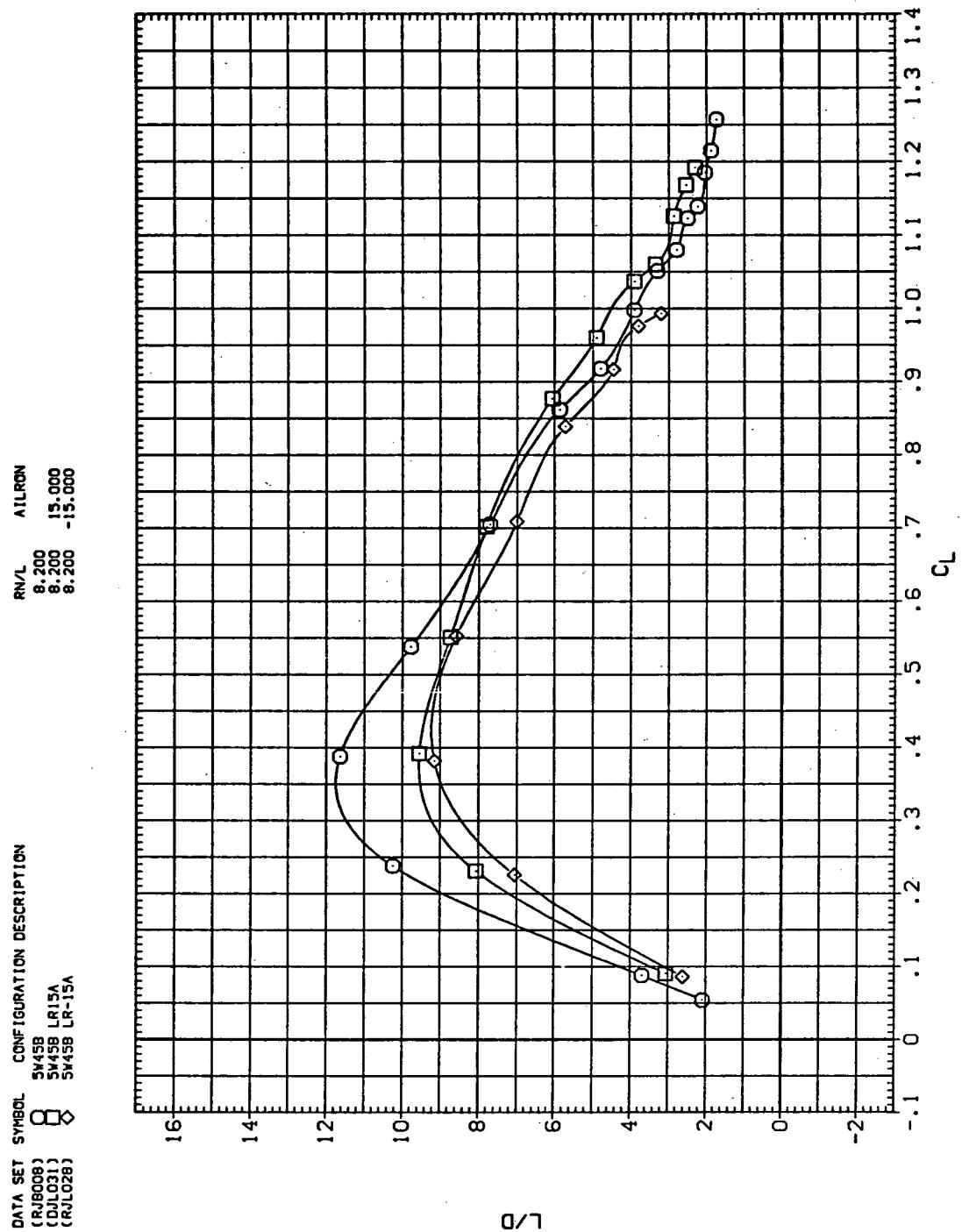
(b)  $C_D$  vs  $C_L$

Figure 26.— Continued.



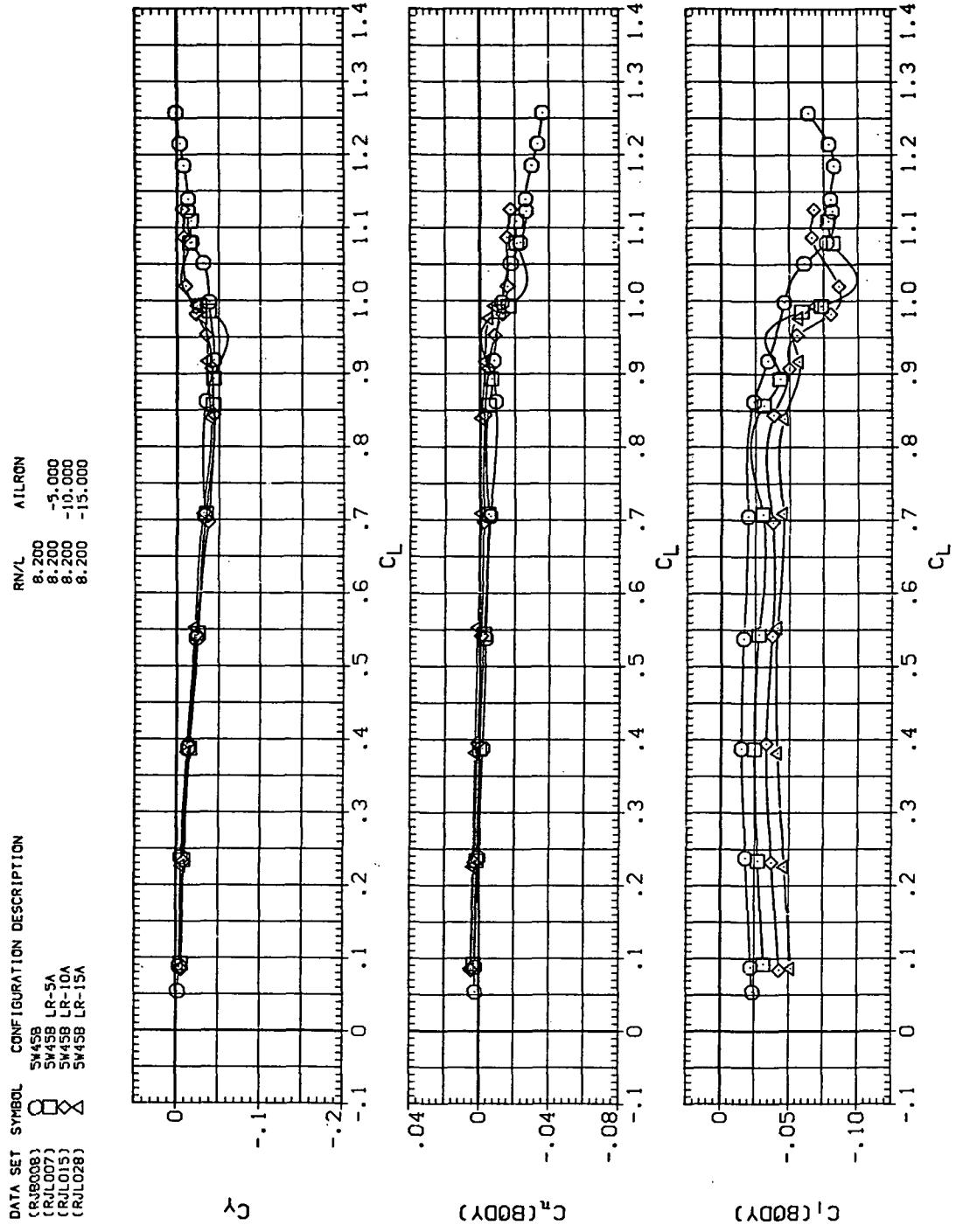
(c)  $C_L$  vs  $C_m$

Figure 26.—Continued.



(d)  $L/D$  vs  $C_L$

Figure 26.—Continued.



(e)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

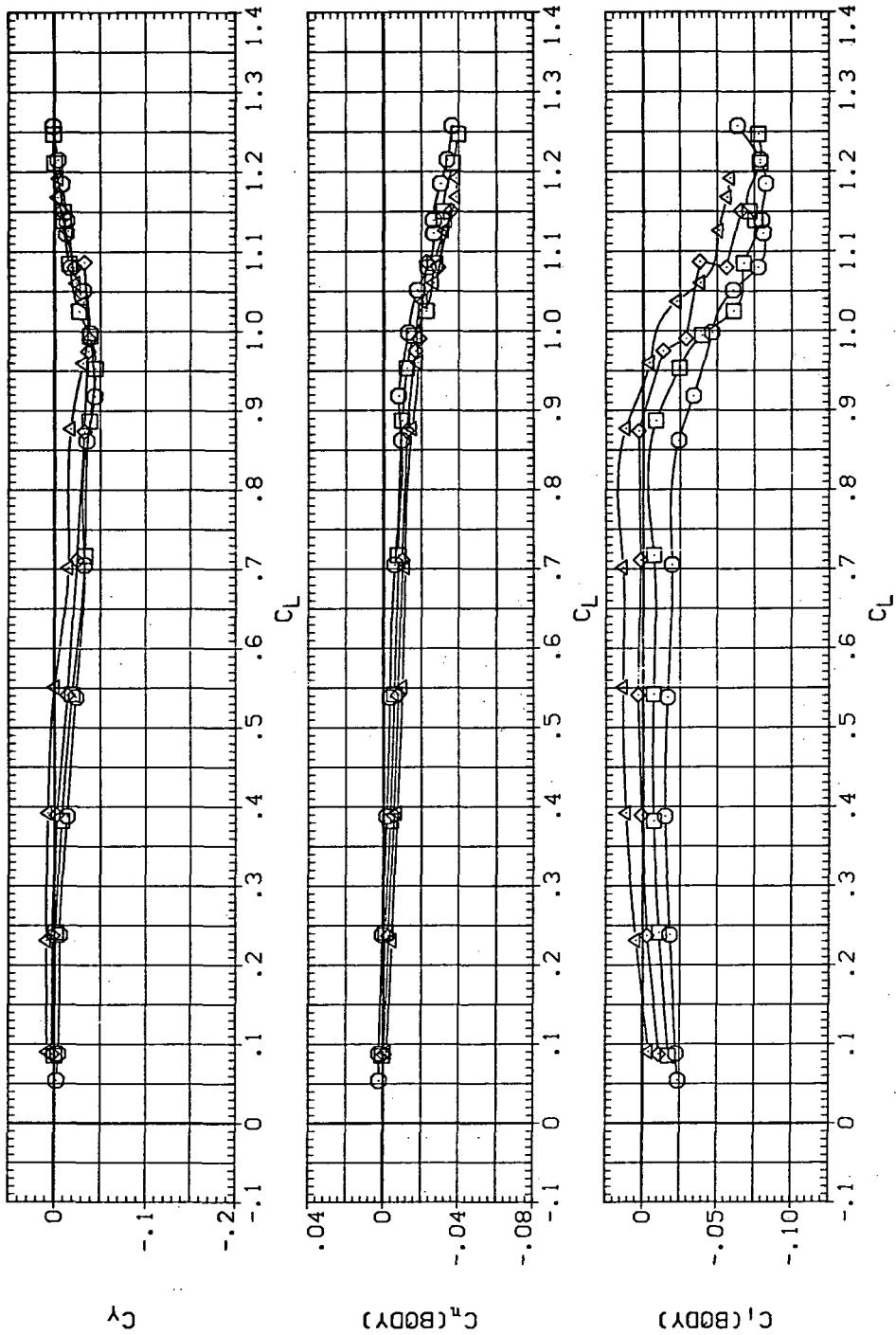
Figure 26.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RJL008)	$\square$	SW45B
(RJL014)	$\circ$	SW45B L55A
(RJL021)	$\diamond$	SW45B L510A
(RJL031)	$\triangle$	SW45B L515A

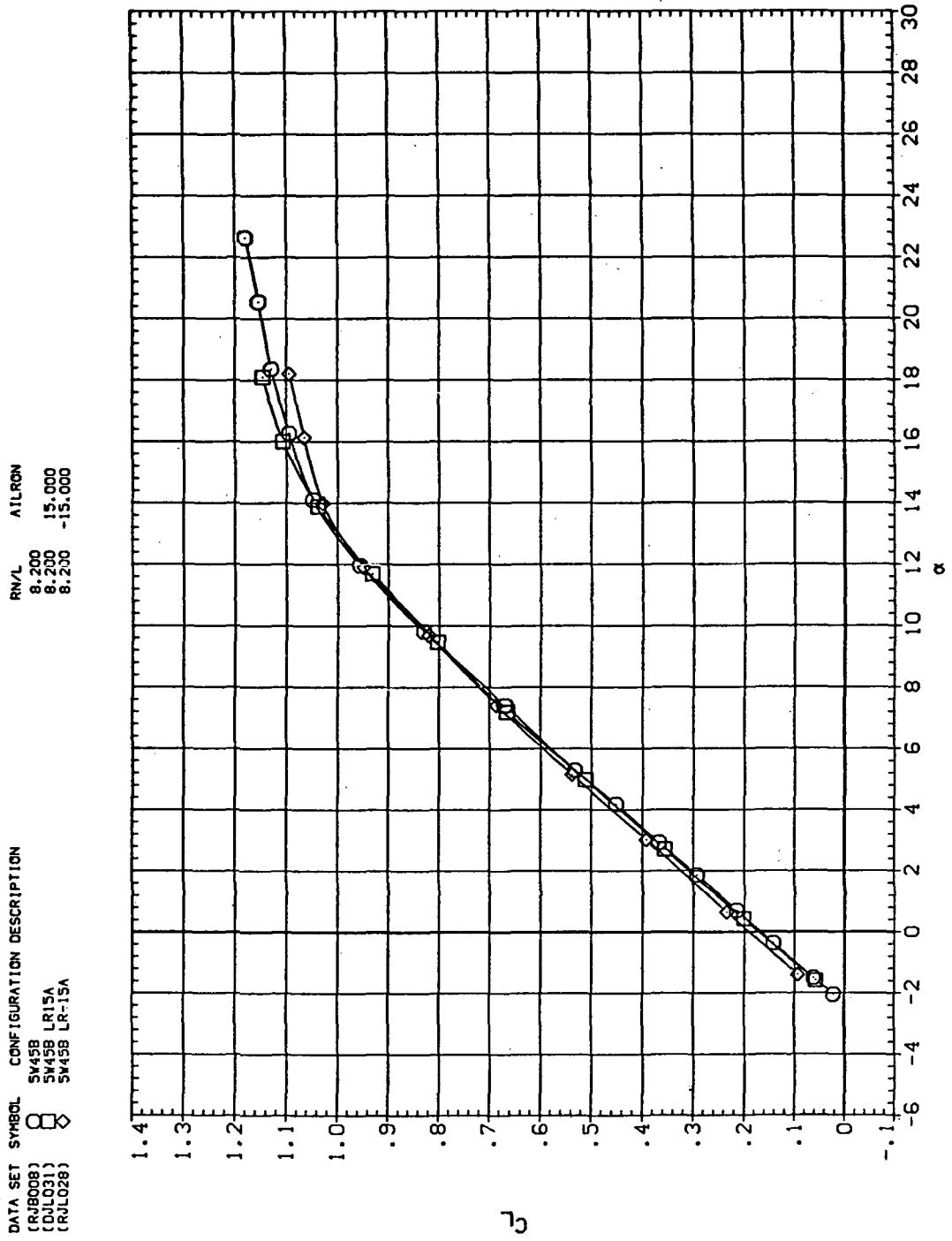
RN/L AILRON

8.200	5,000
8.200	10,000
8.200	15,000



(f)  $C_Y$ ,  $C_n$ , and  $C_I$  vs.  $C_L$  (positive  $\Delta\delta_a$ 's).

Figure 26.— Concluded.



(a)  $C_L$  vs  $\alpha$ .

Figure 27.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 45^\circ, M = 1.1.$

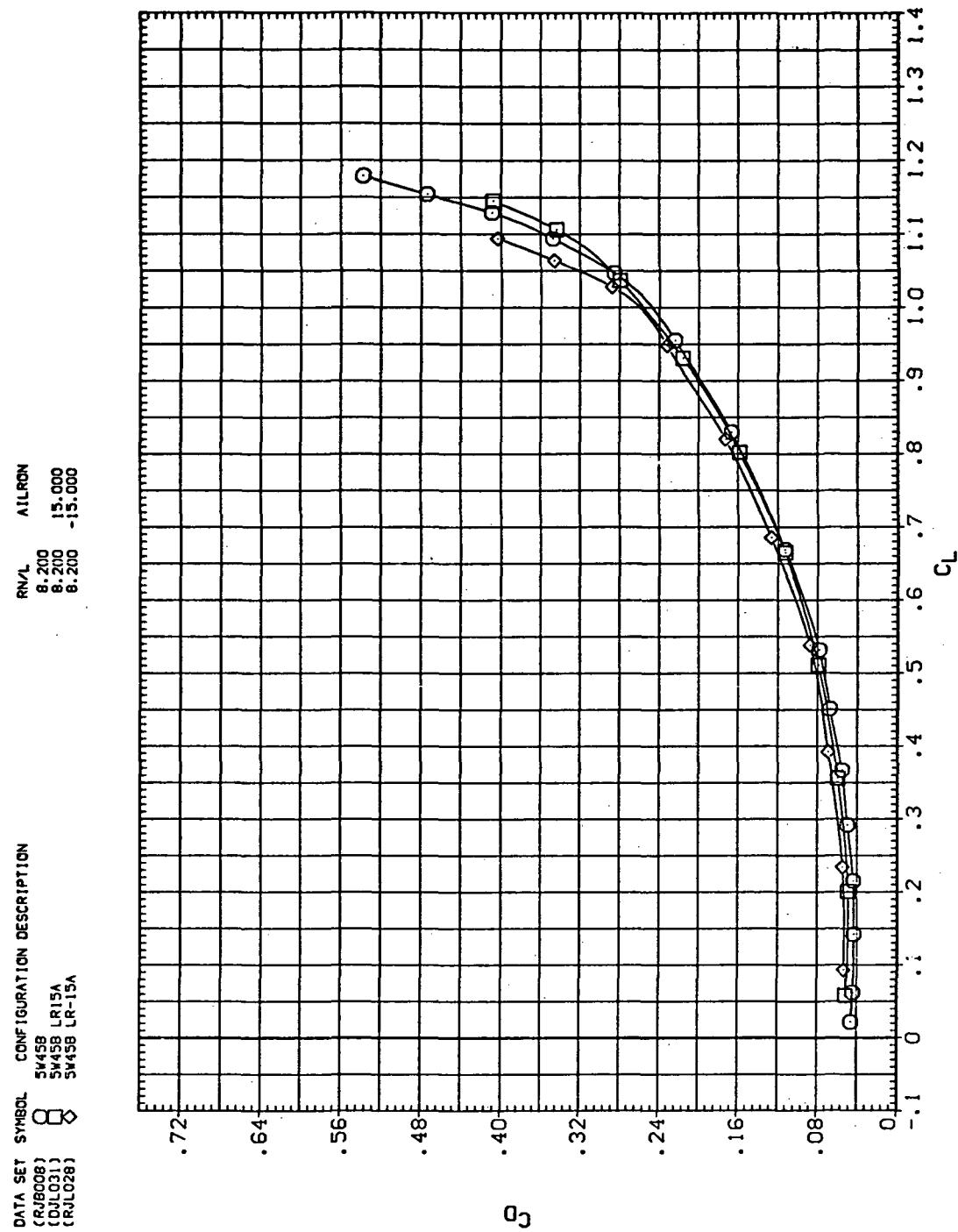
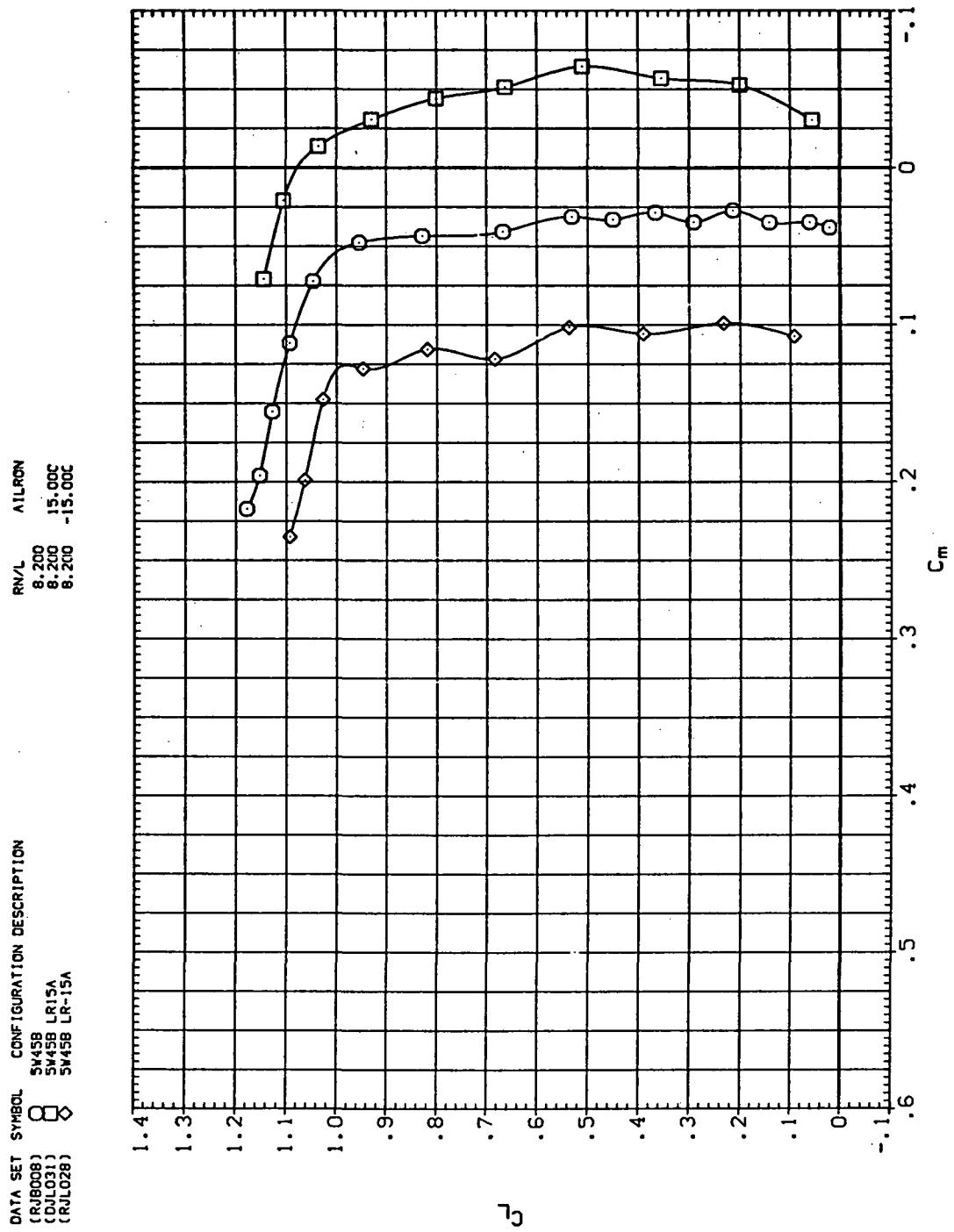
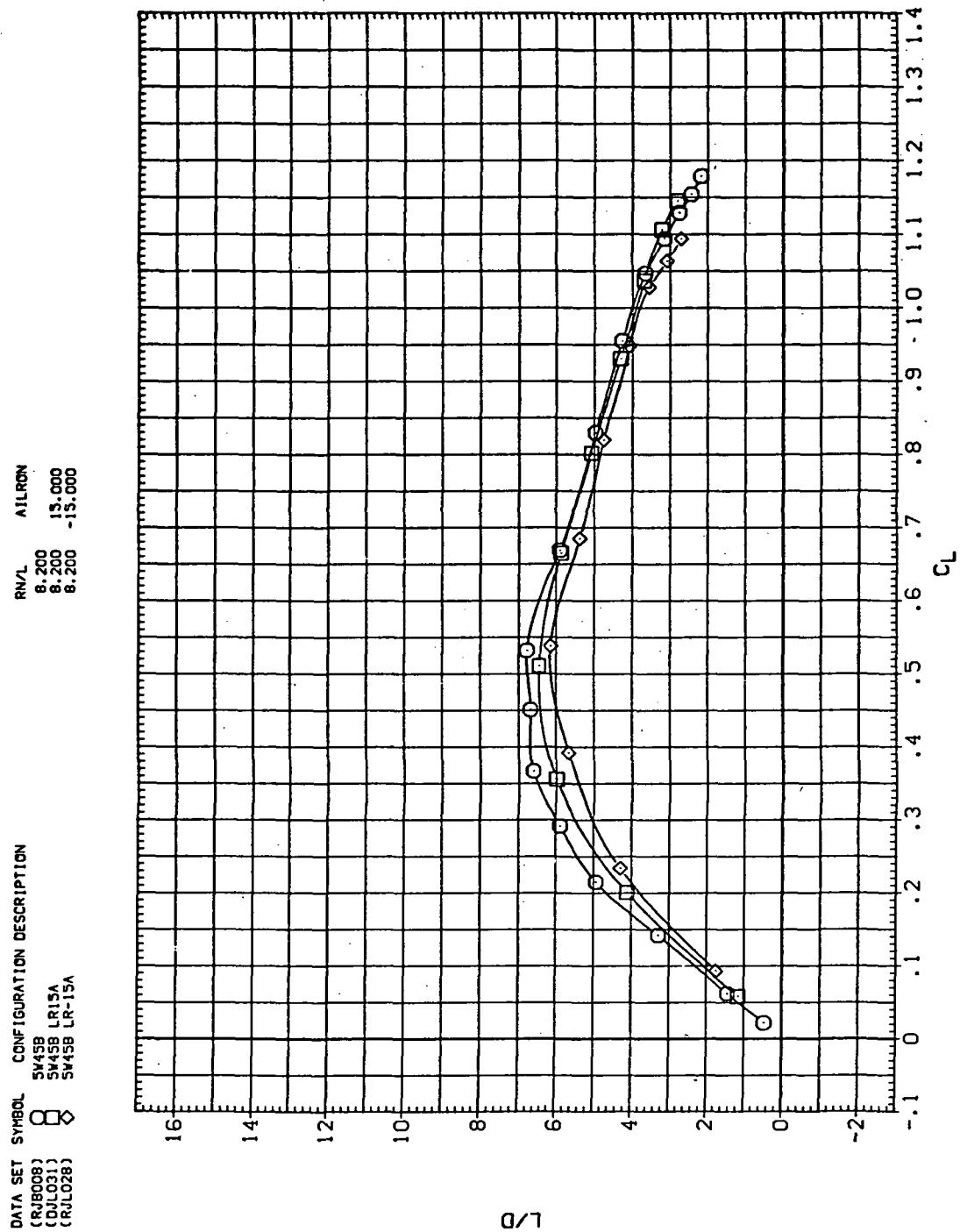
(b)  $C_D$  vs  $C_L$ 

Figure 27.—Continued.



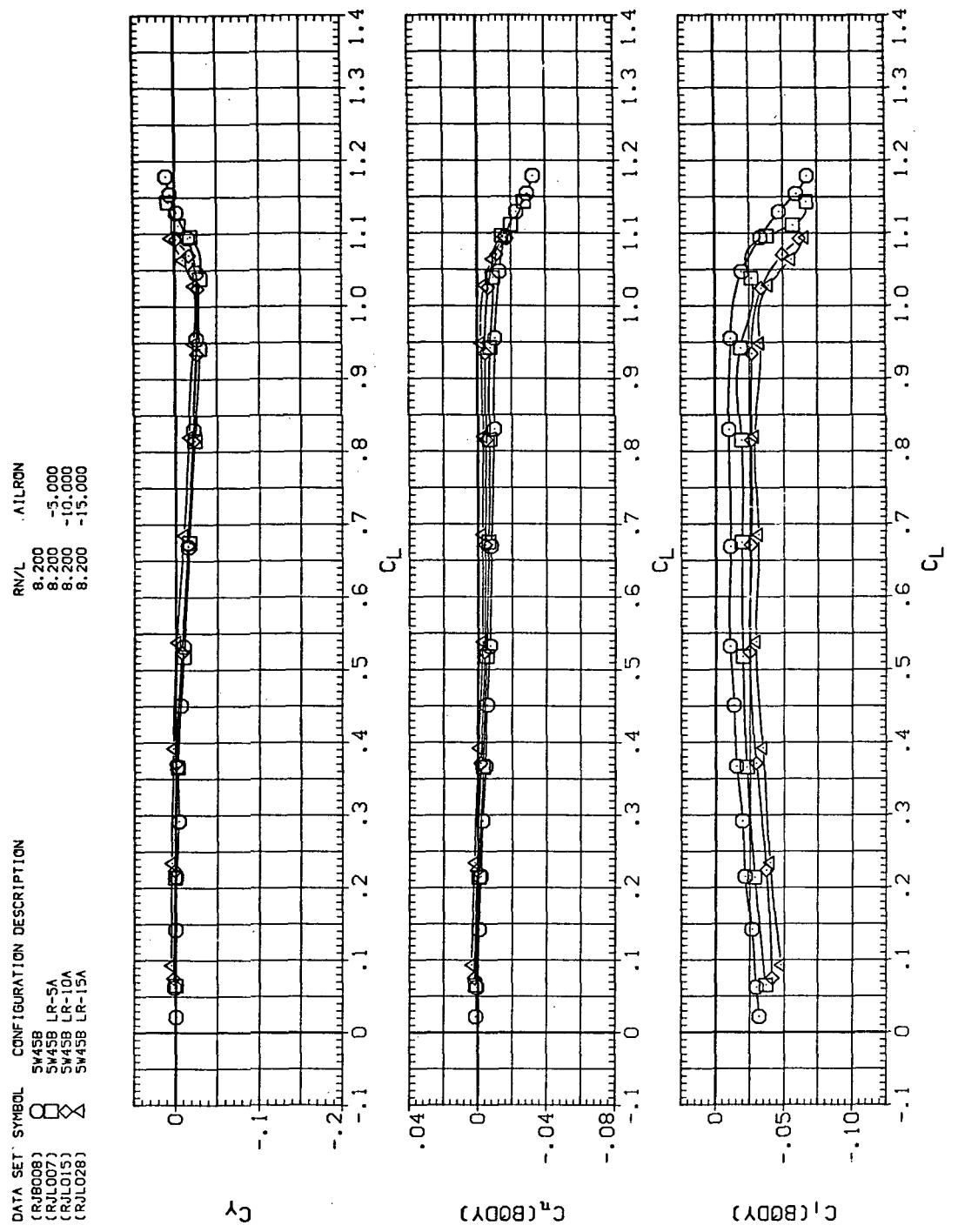
(c)  $C_L$  vs  $C_m$

Figure 27.—Continued.



(d)  $L/D$  vs  $C_L$

Figure 27.—Continued.



(e)  $C_y$ ,  $C_n$ , and  $C_1$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

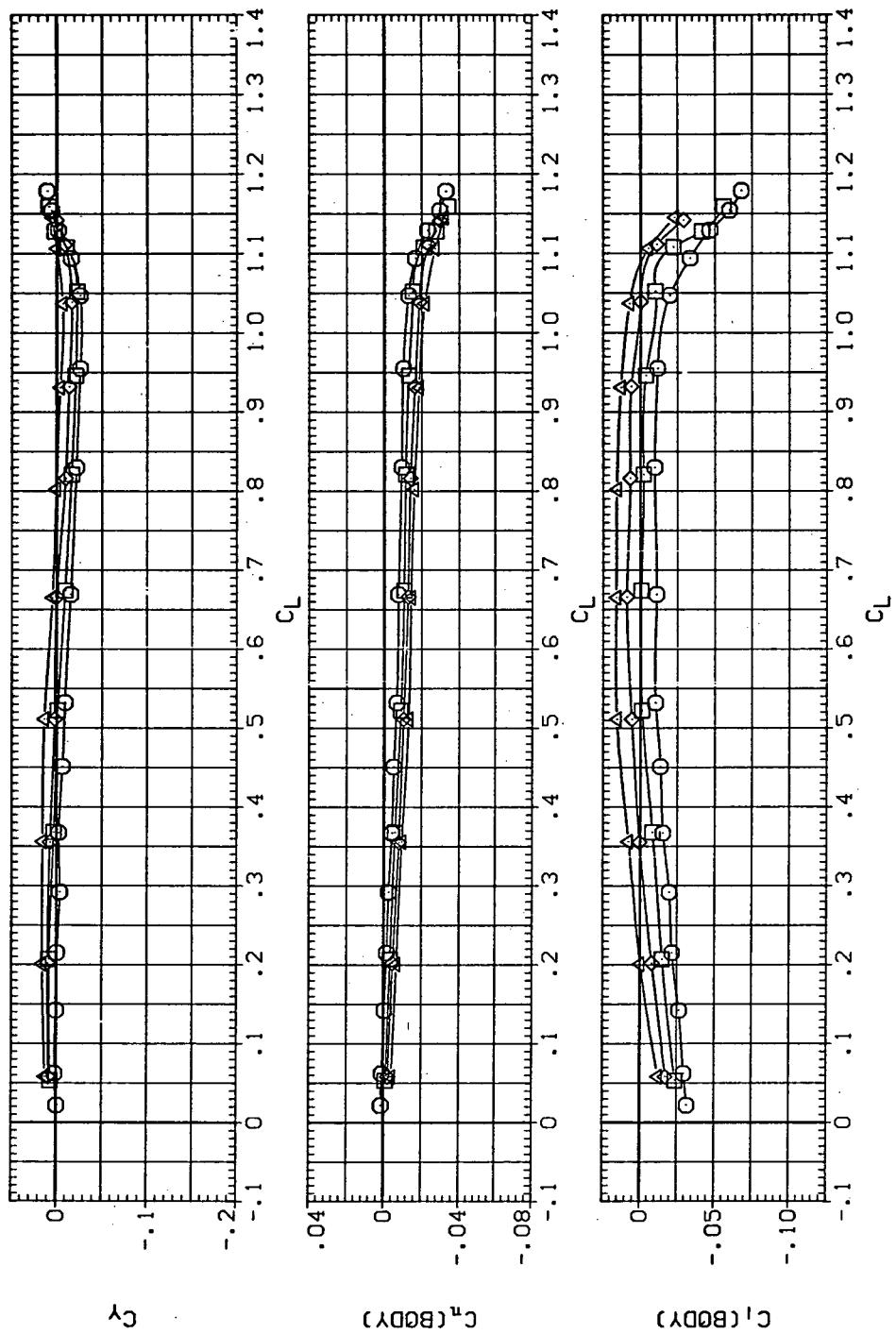
Figure 27.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RJ8008)	$\square$	SW45B
(RJL014)	$\square$	SW45B LRSA
(RJL021)	$\diamond$	SW45B LR10A
(DJL031)	$\times$	SW45B LR15A

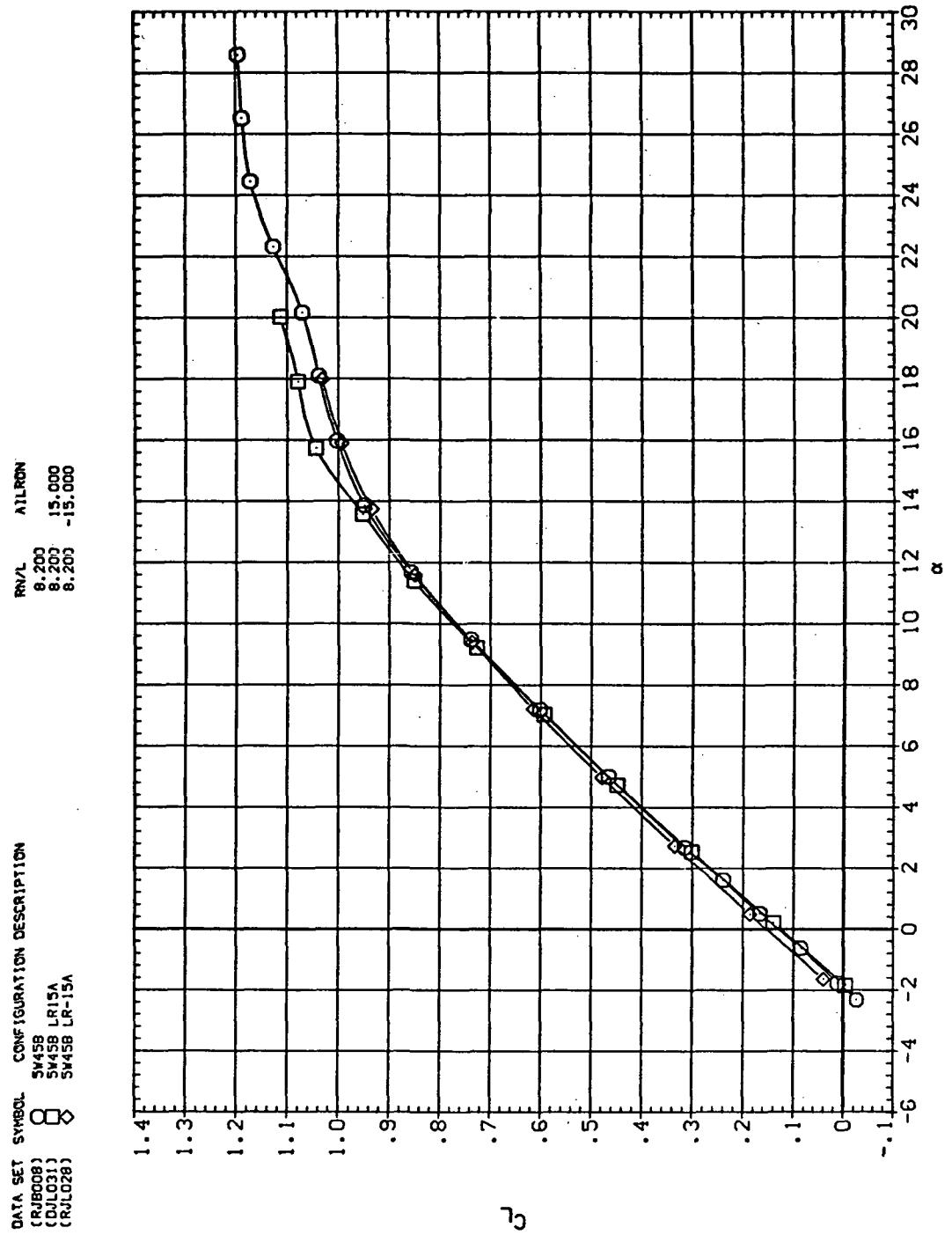
RN/L AIRFRN

8.200	5.000
8.200	10.000
8.200	15.000



(f)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (positive  $\Delta\delta_a$ 's).

Figure 27.— Concluded.



(a)  $C_L$  vs  $\alpha$

Figure 28.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 45^\circ, M = 1.2.$

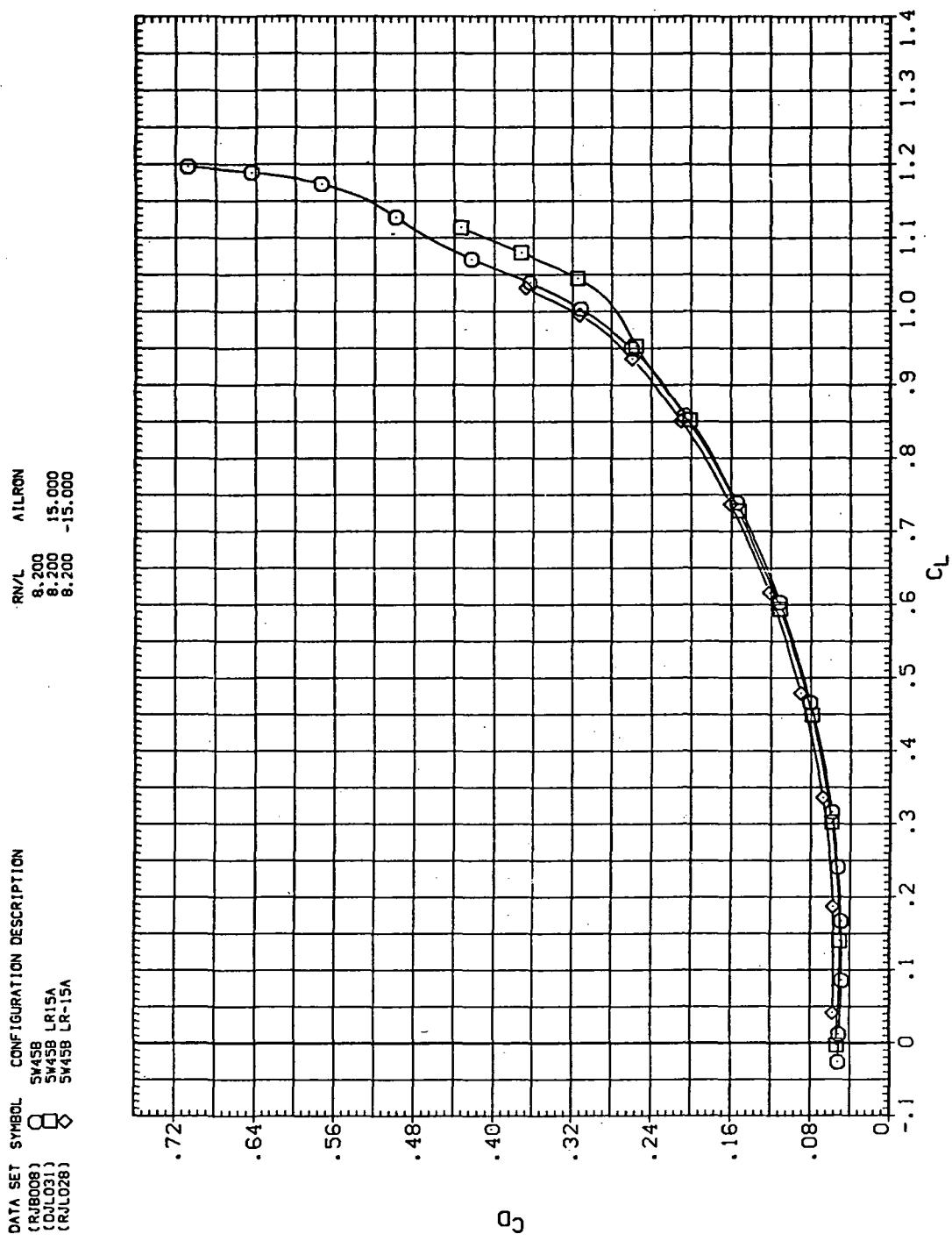
(b)  $C_D$  vs  $C_L$ 

Figure 28.— Continued.

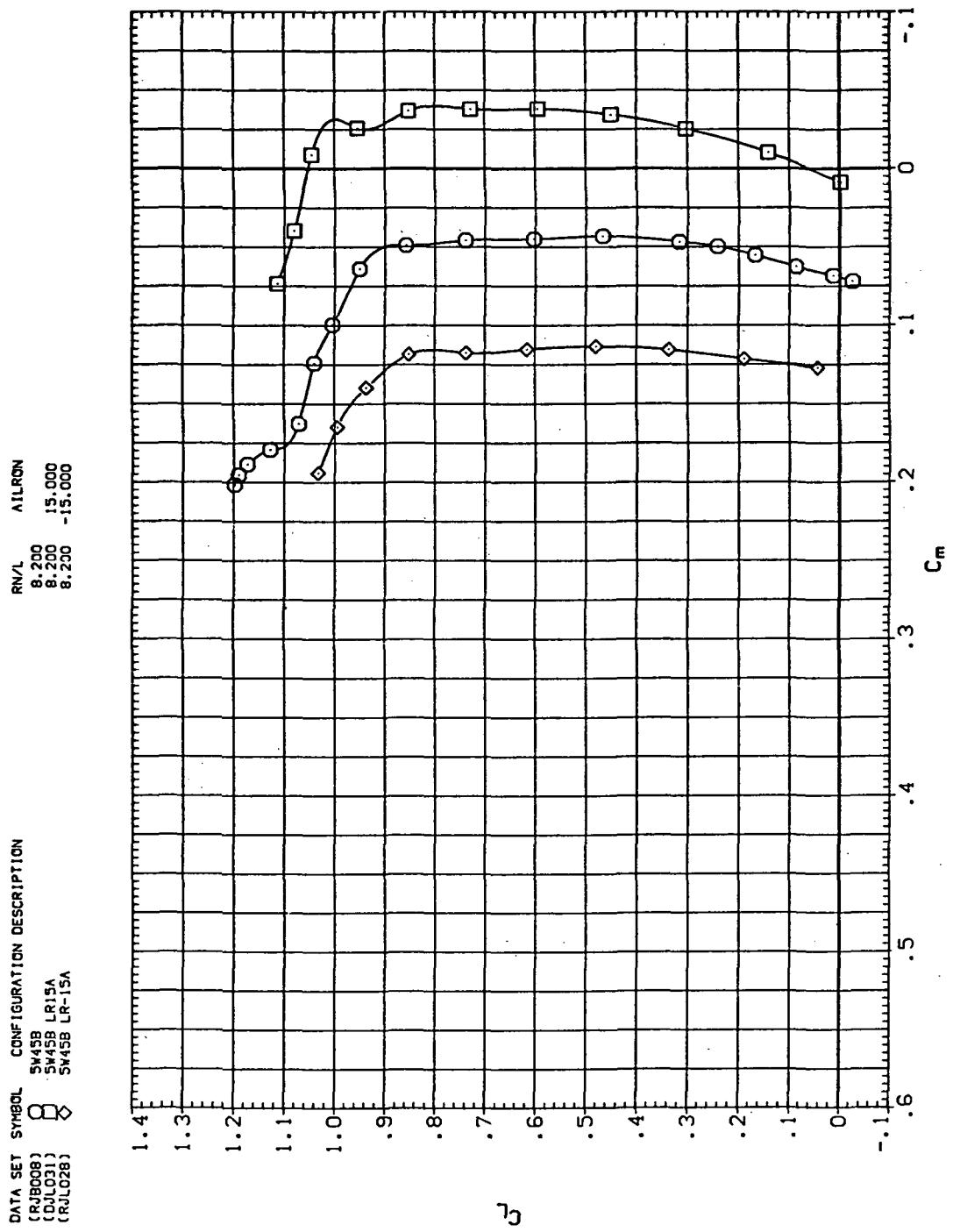
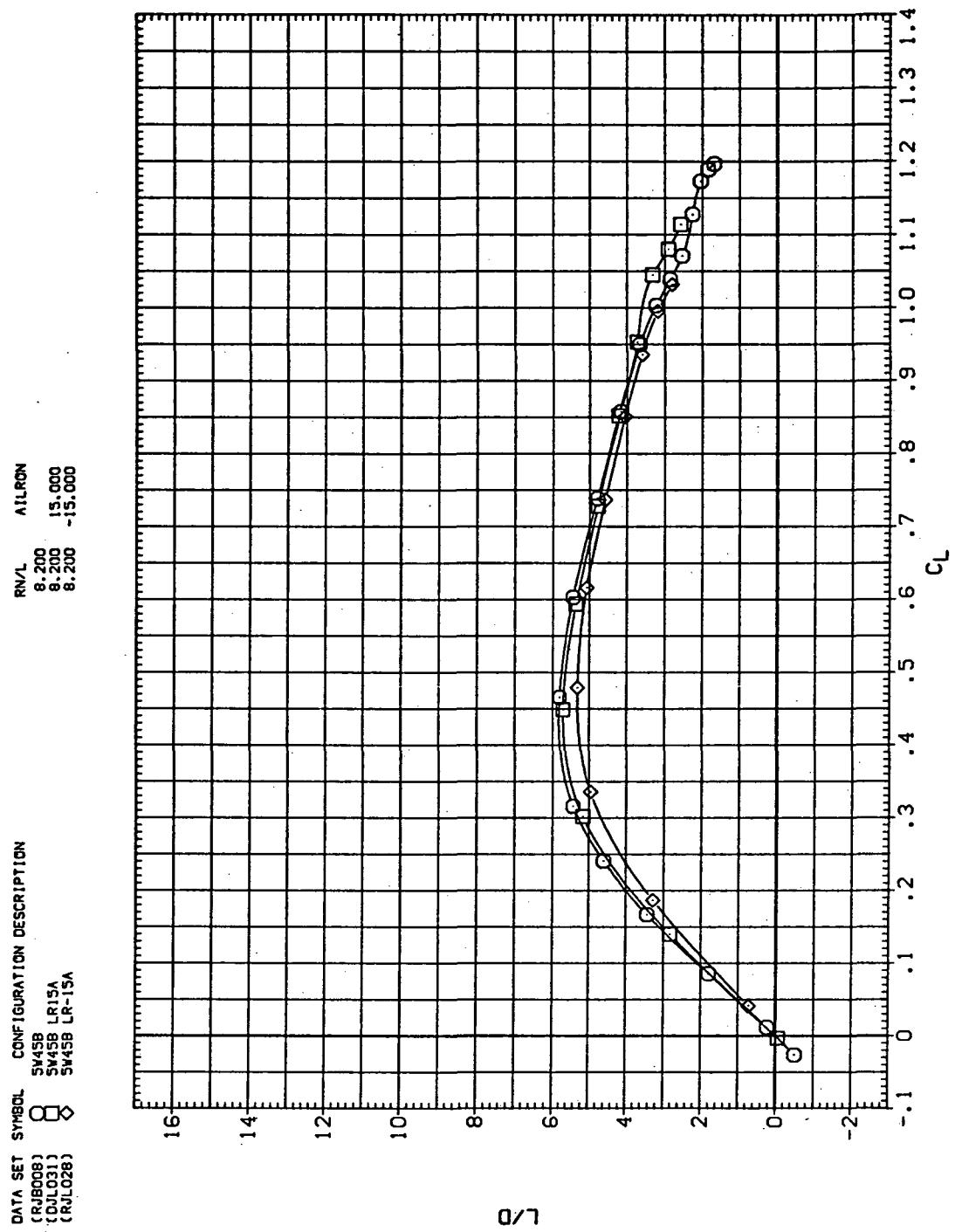
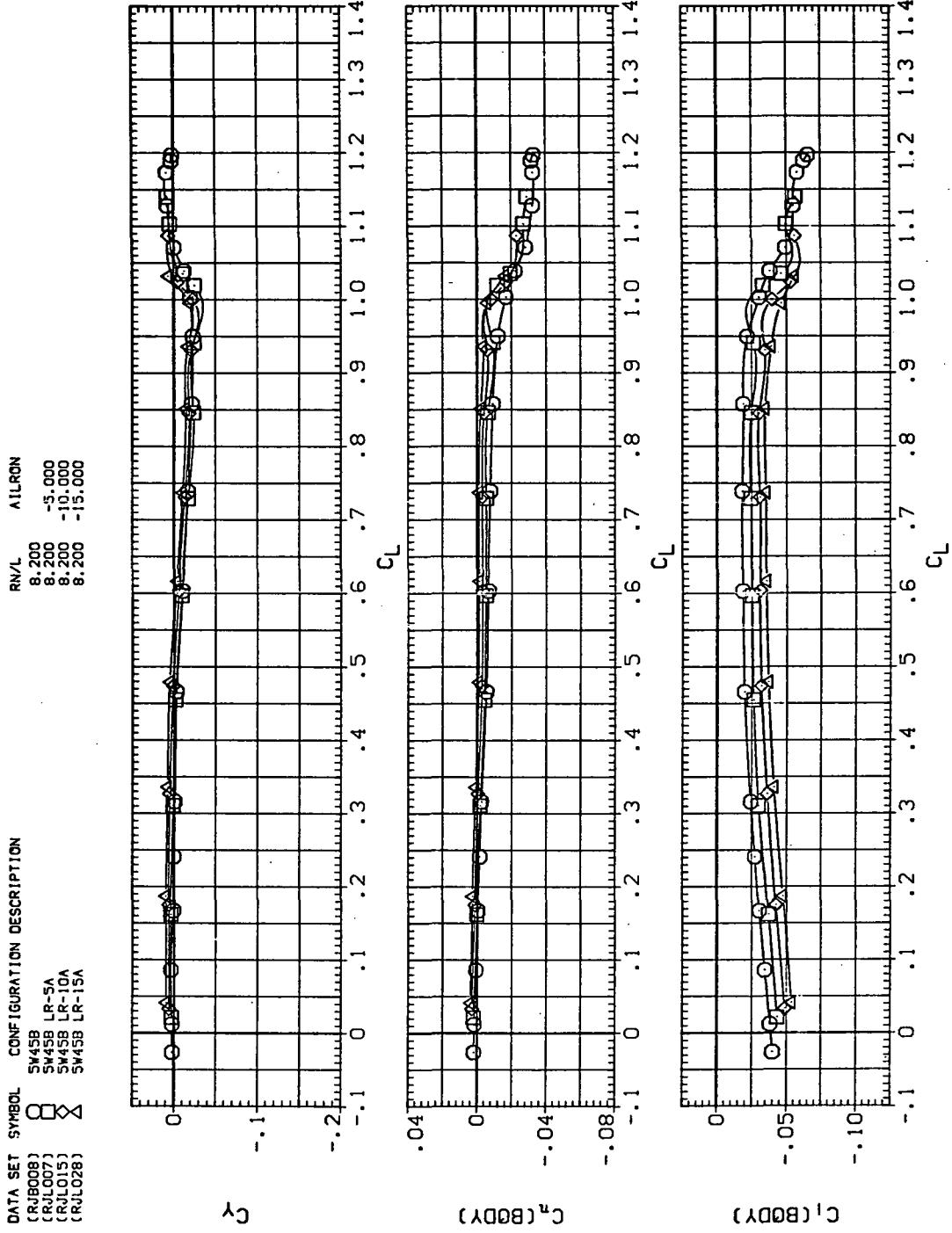
(c)  $C_L$  vs  $C_m$ 

Figure 28.— Continued.



(d)  $L/D$  vs  $C_L$

Figure 28.— Continued.

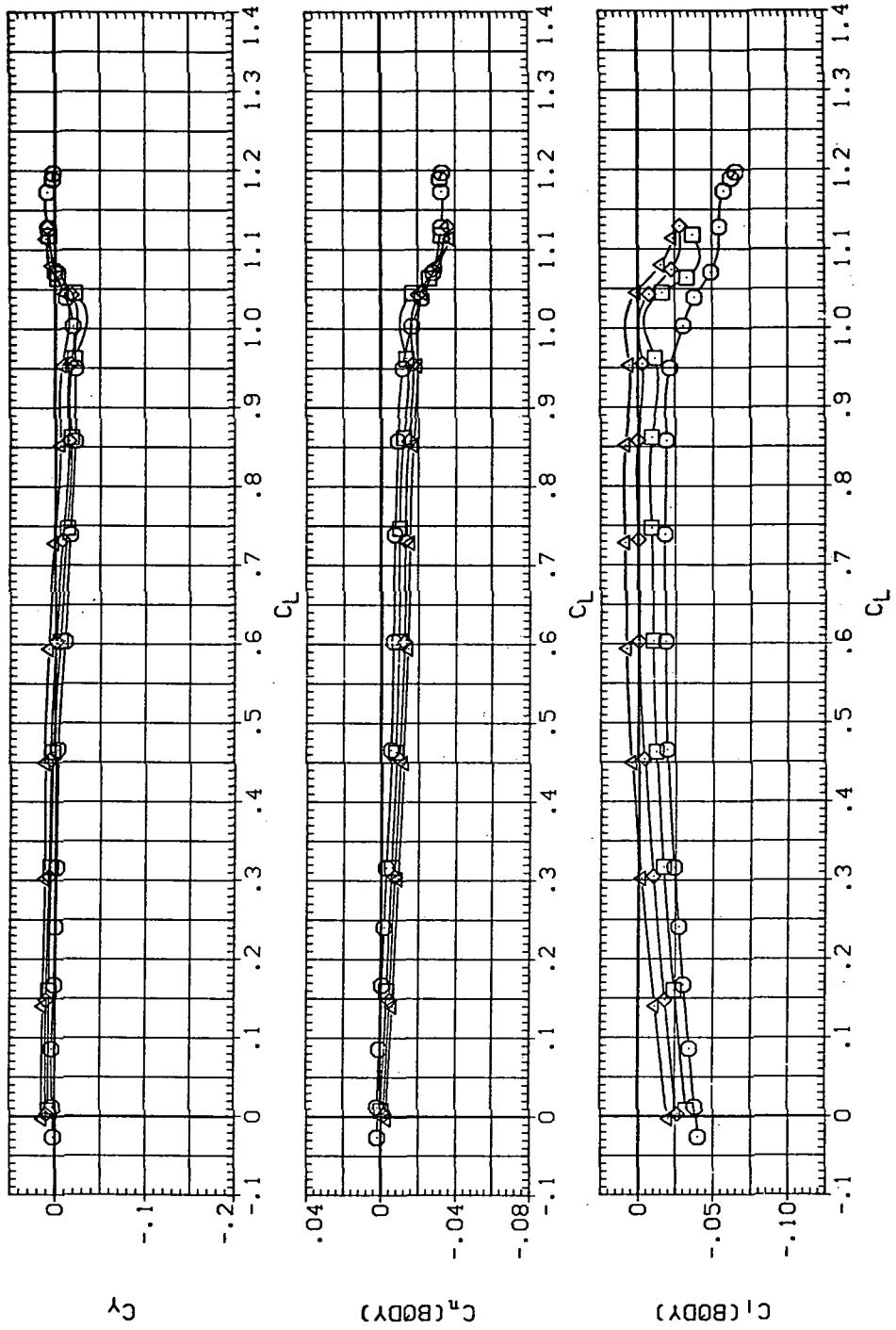


(e)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

Figure 28.—Continued.

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(RJL008)	○	SW4SB
(RJL014)	□	SW4SB LRSA
(RJL021)	×	SW4SB LR10A
(RJL031)	×	SW4SB LR15A

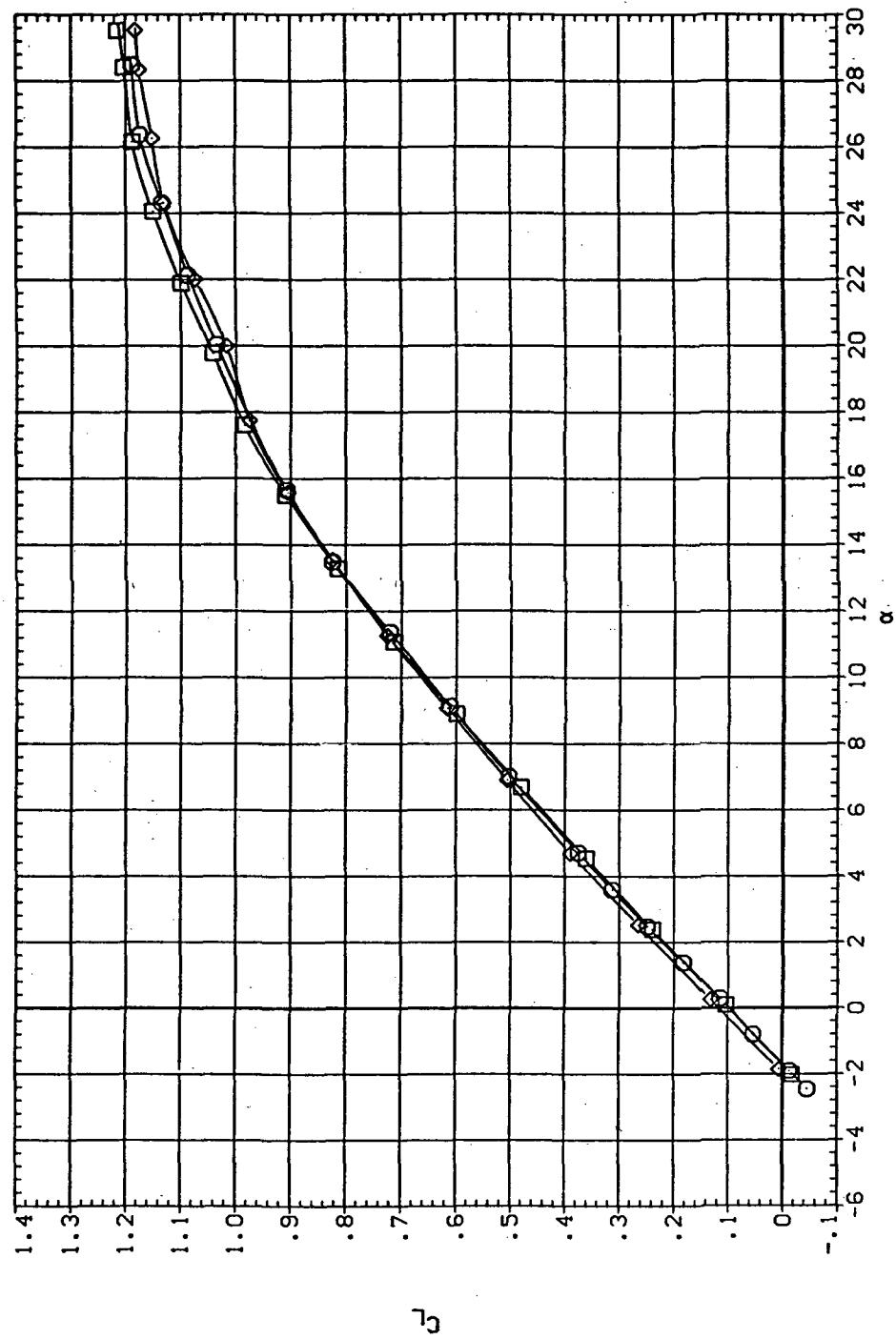
RNL	AIRRN
8.200	5,000
8.200	5,000
8.200	10,000
8.200	15,000



(f)  $C_Y$ ,  $C_n$ , and  $C_L$  vs  $C_L$  (positive  $\Delta\delta_a$ 's).

Figure 28.— Concluded.

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(RB008)	○	SW458
(DL031)	□	SW458 LR15A
(RL028)	◊	SW458 LR-15A



(a)  $C_L$  vs.  $\alpha$

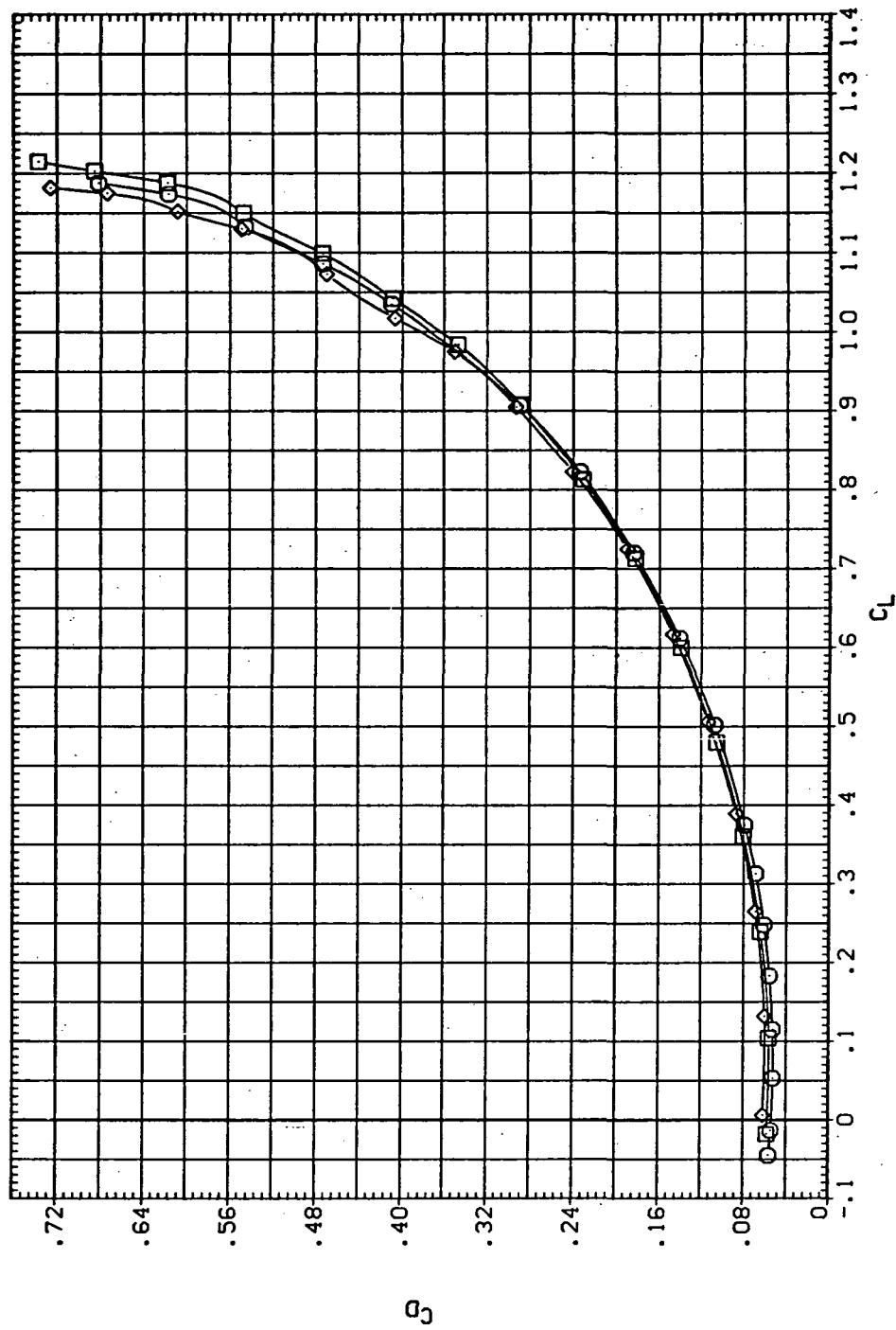
Figure 29.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 45^\circ, M = 1.4.$

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RJB008)		SW45B	
(DJL031)		SW45B	LRISA
(RJL028)		SM45B	LR-15A

RN/L AIRON

8.200	15.000
8.200	-15.000
8.200	



(b)  $C_D$  vs  $C_L$

Figure 29.—Continued.

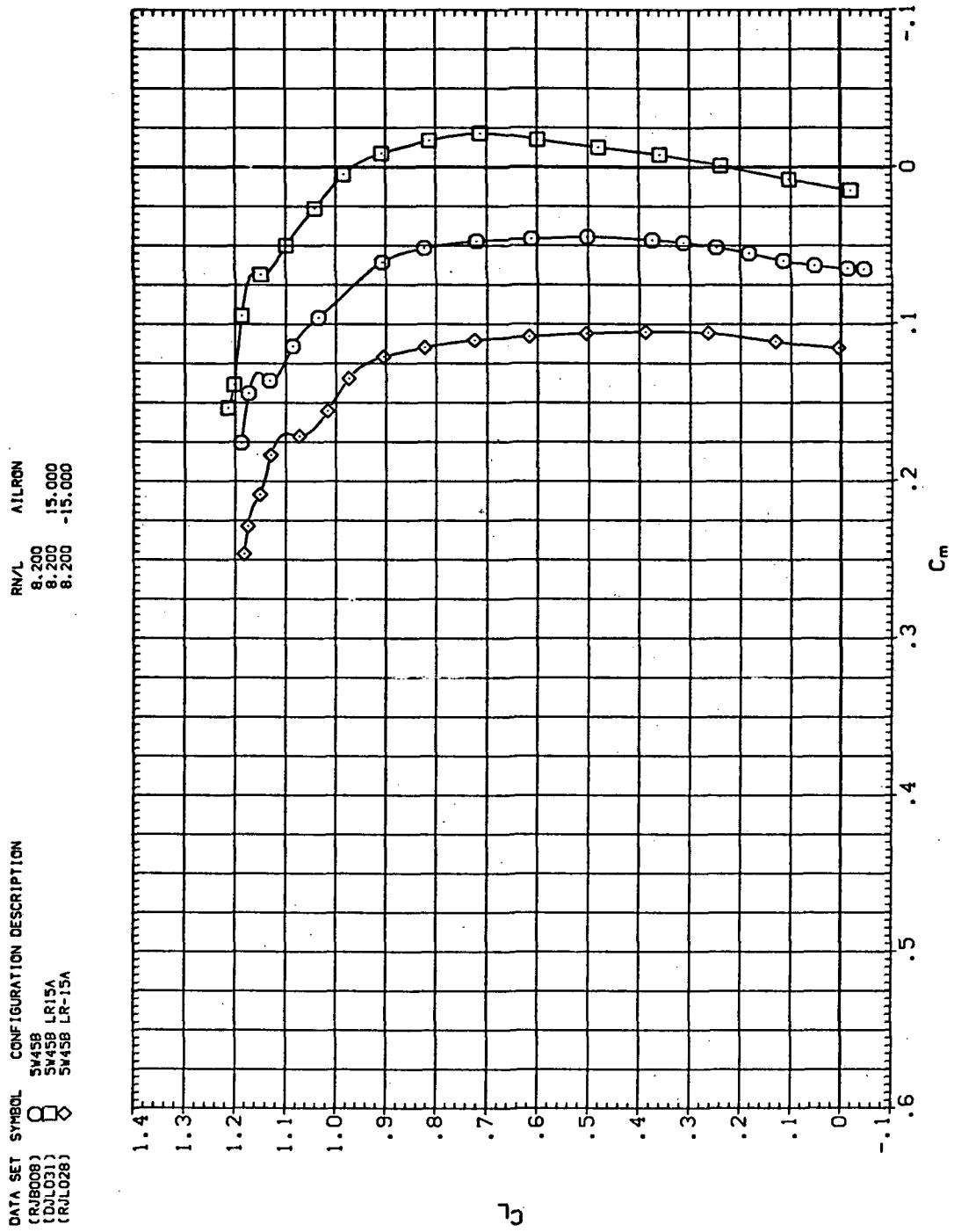
(c)  $C_L$  vs  $C_m$ 

Figure 29.— Continued.

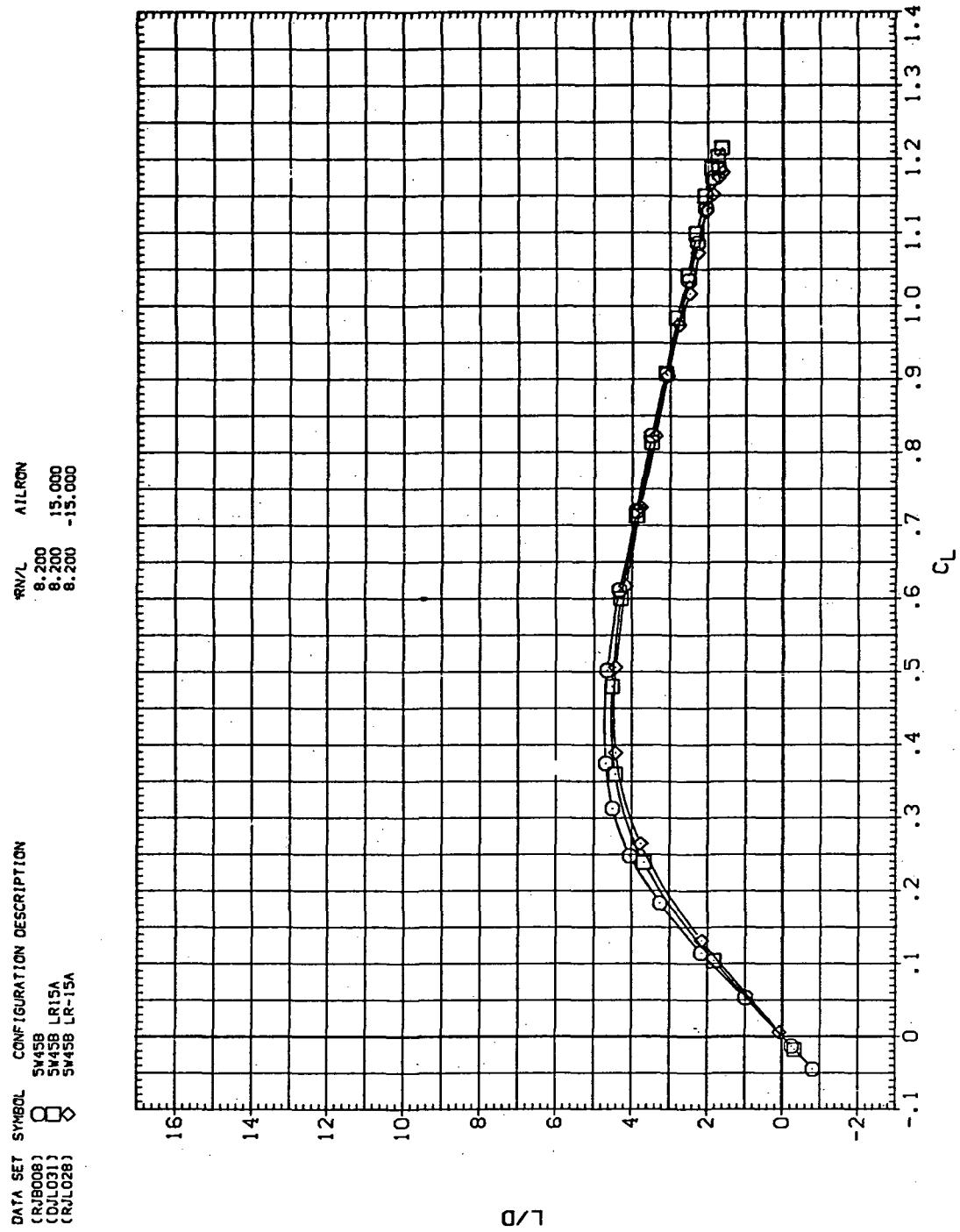
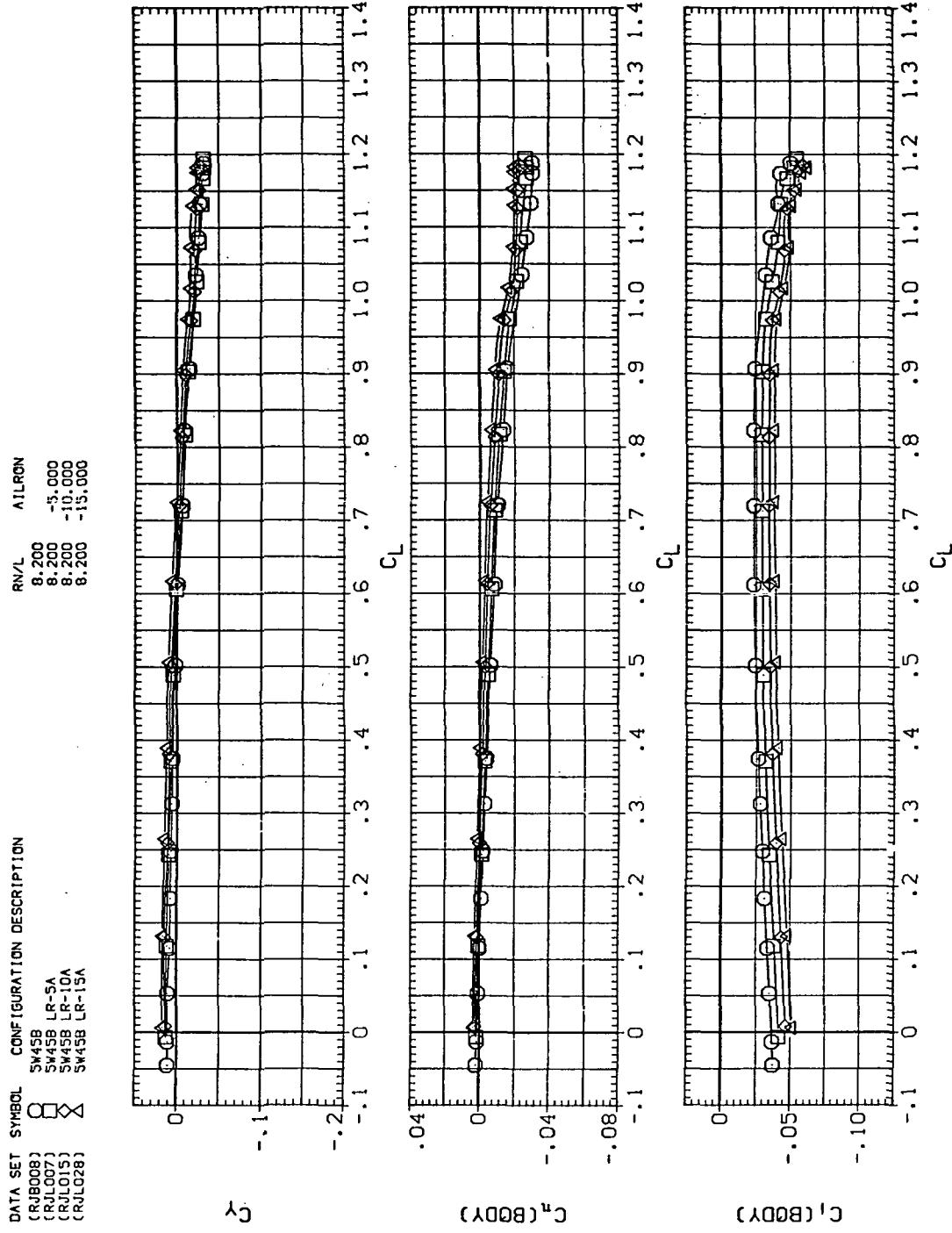


Figure 29.—Continued.



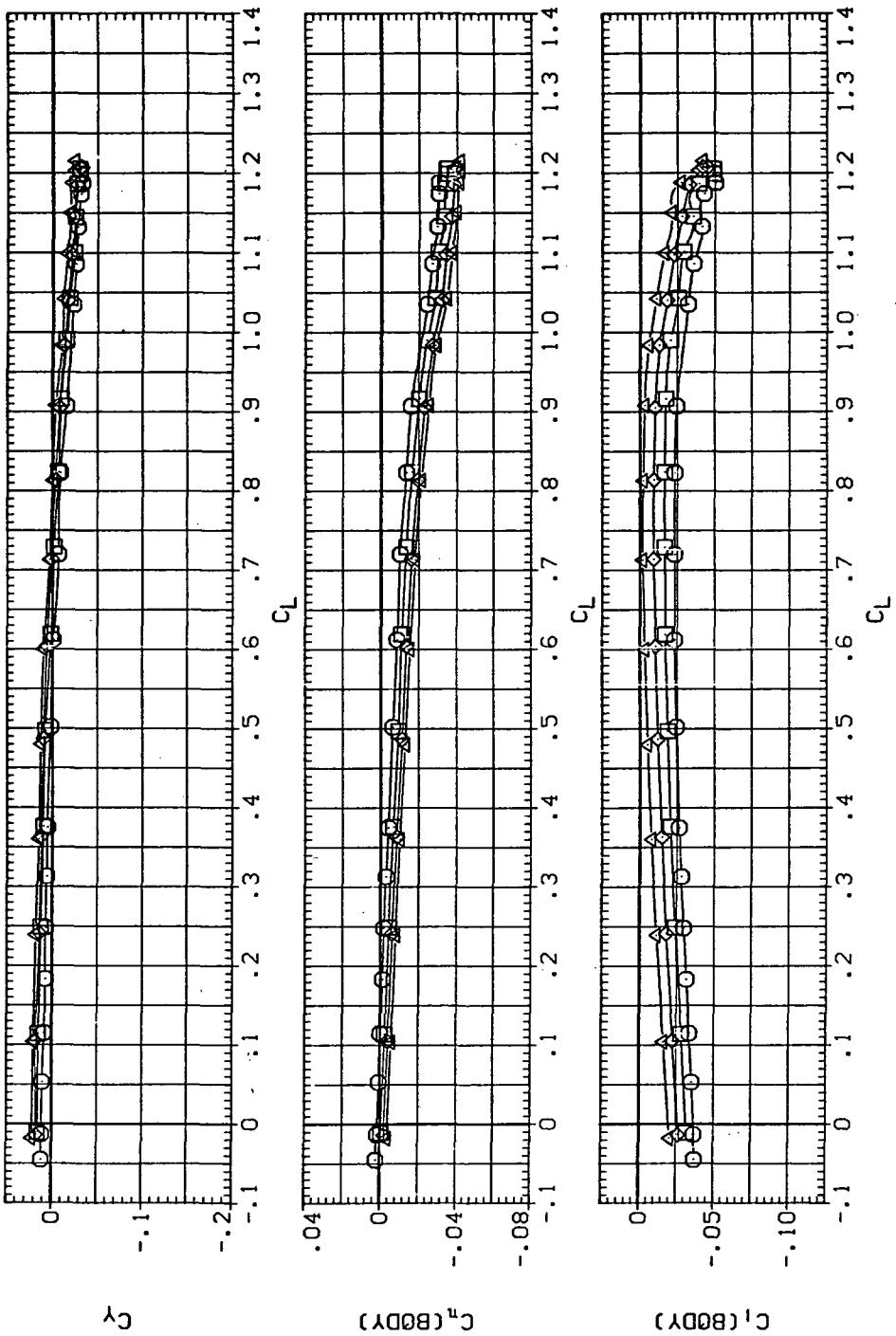
(e)  $C_Y$ ,  $C_n$ , and  $C_I$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

Figure 29.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

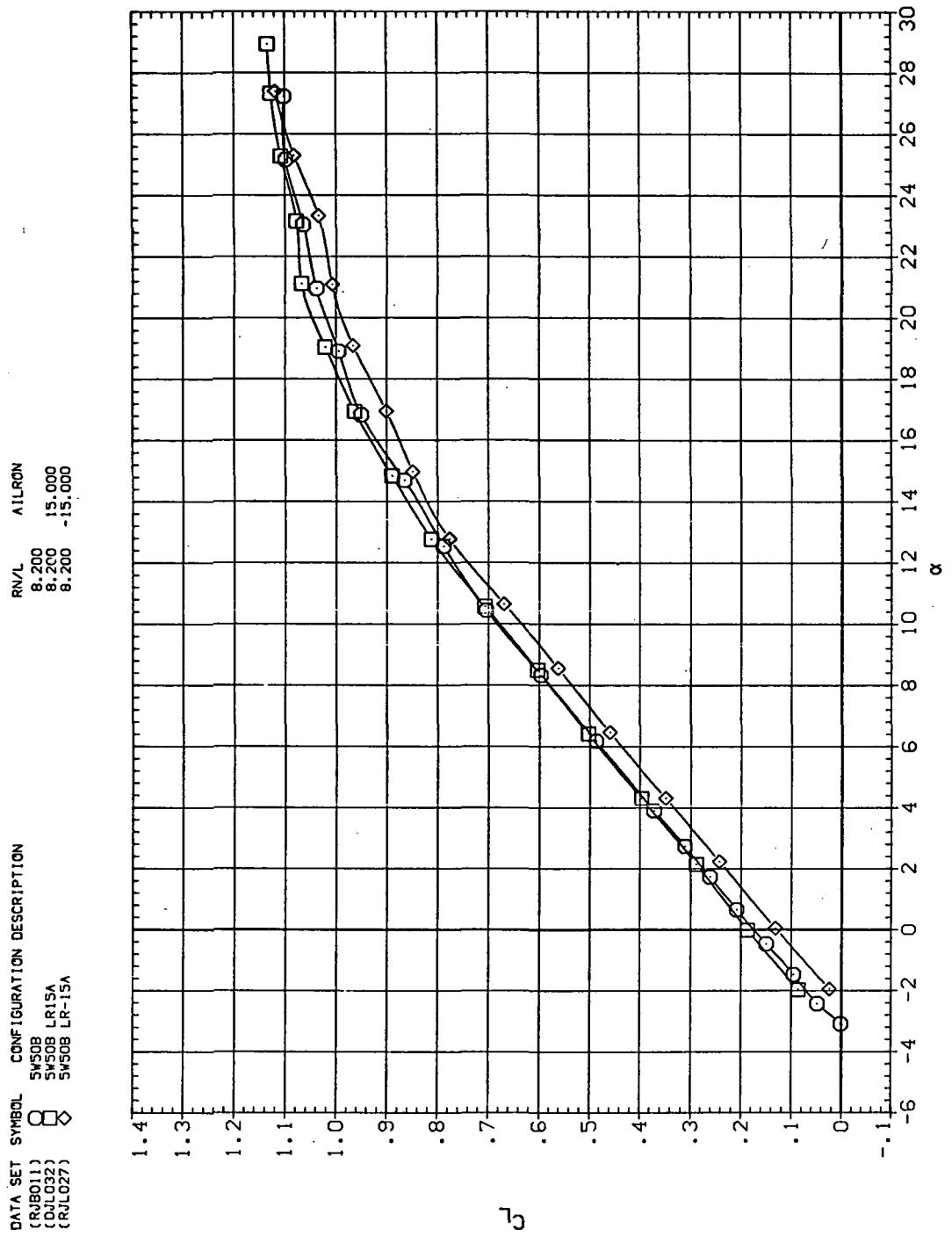
(R1B008)	$\square$	SW458	R1L00N
(R1L014)	$\square$	SW458	8.200 5,000
(R1L021)	$\diamond$	SW458	8.200 10,000
(R1L031)	$\triangle$	SW458	8.200 15,000

RN/L  
8.200  
8.200  
8.200  
8.200



(f)  $C_Y$ ,  $C_n$ , and  $C_I$  vs  $C_L$  (positive  $\Delta\delta_d$ 's).

Figure 29.— Concluded.



(a)  $C_L$  vs  $\alpha$

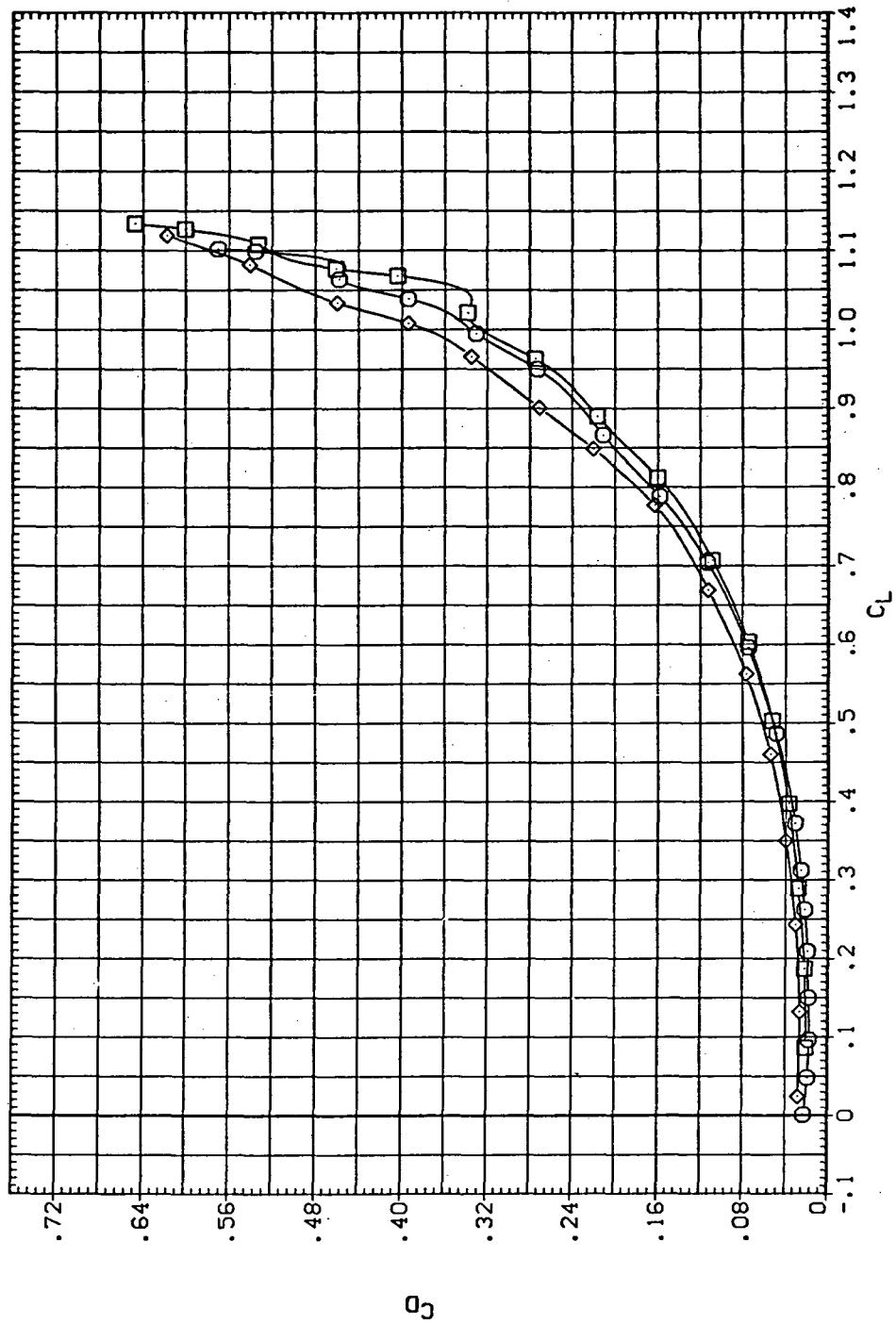
Figure 30.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 50^\circ, M = 0.60.$

DATA SET SYMBOL CONFIGURATION DESCRIPTION

[RJB011]	○	SW50B	LR15A
[CDJL032]	□	SW50B	LR15A
[RJL027]	◇	SW50B	LR15A

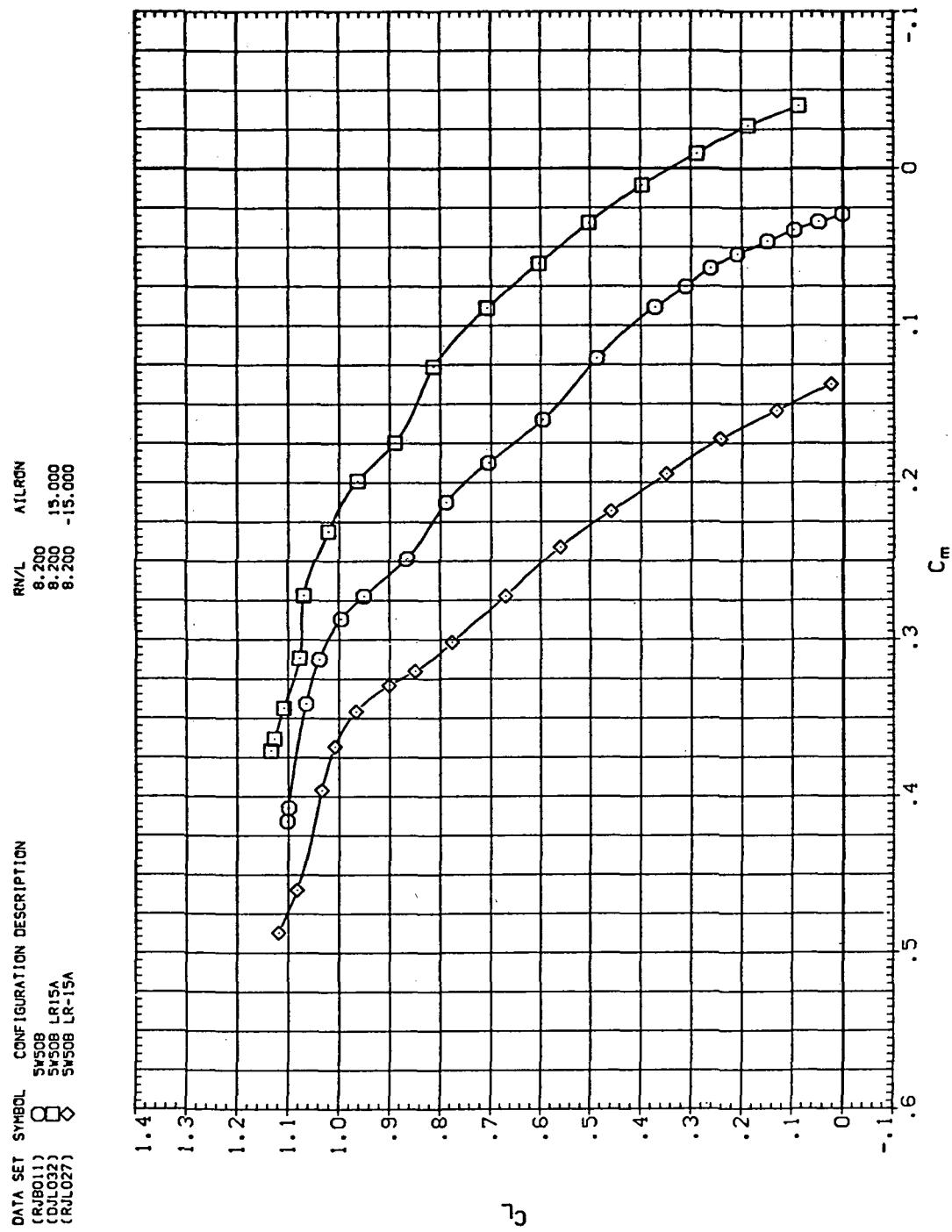
RN/L AILRON

8.200	15.000
8.200	-15.000
8.200	



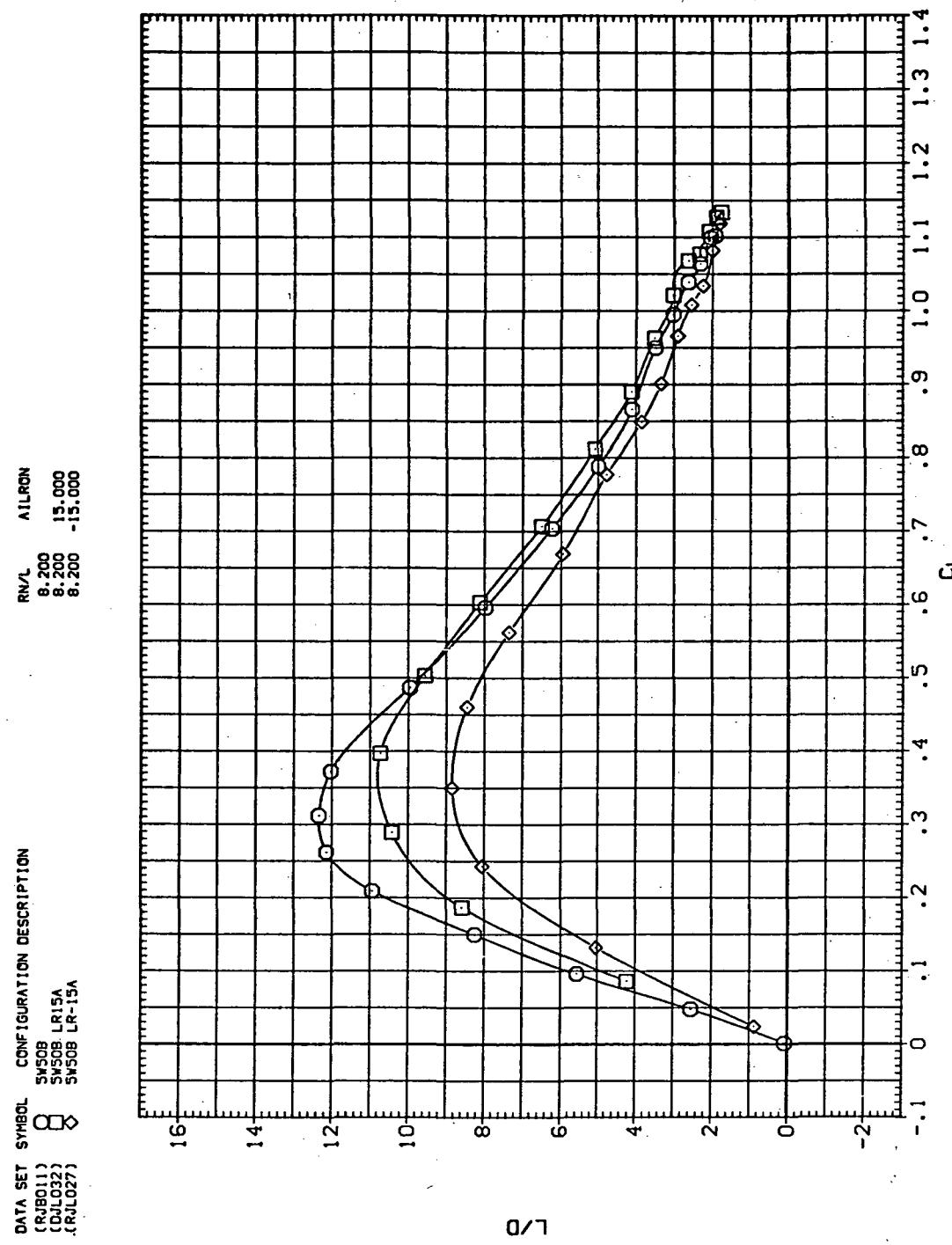
(b)  $C_D$  vs  $C_L$

Figure 30.— Continued.



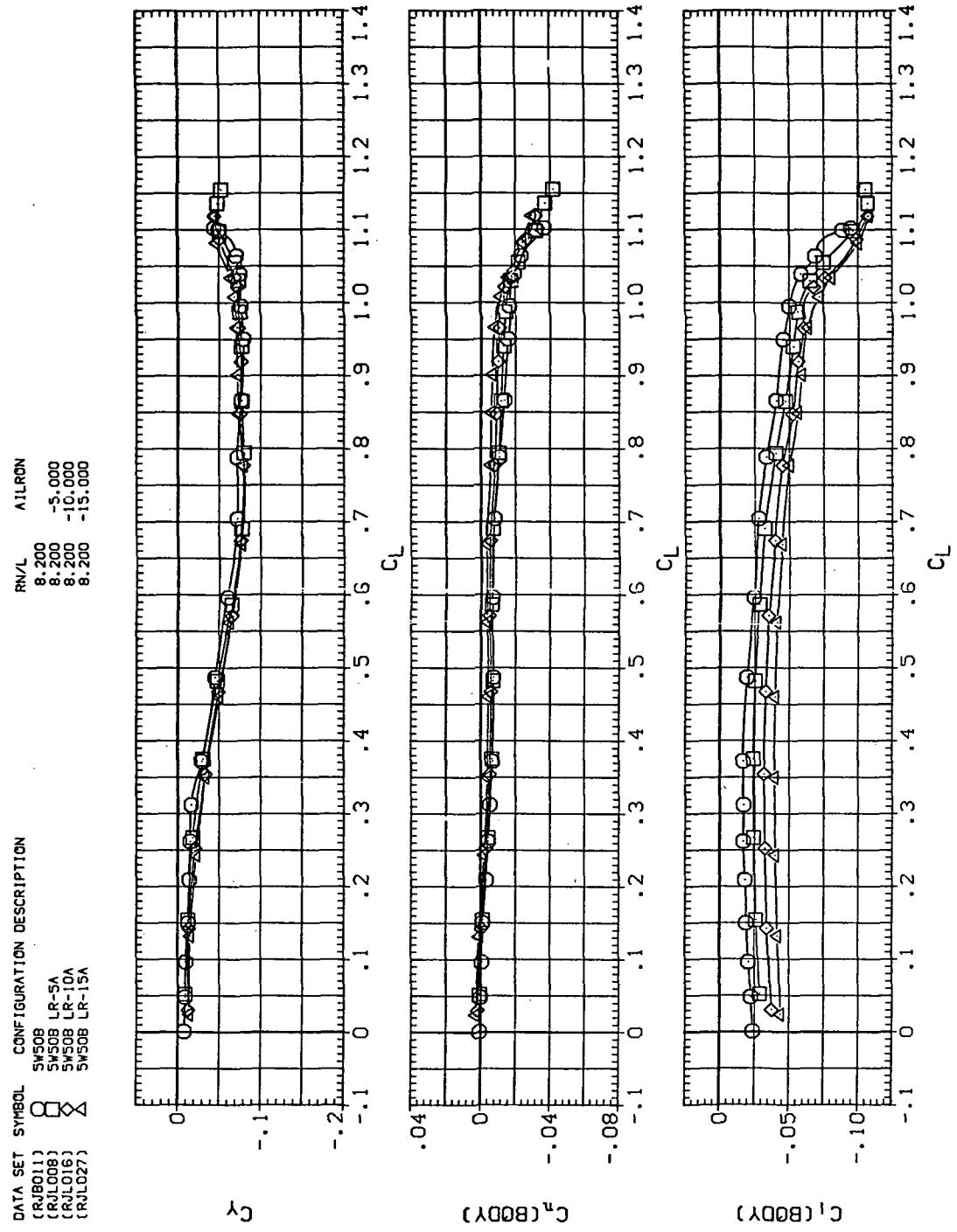
(c)  $C_L$  vs  $C_m$ .

Figure 30.—Continued.



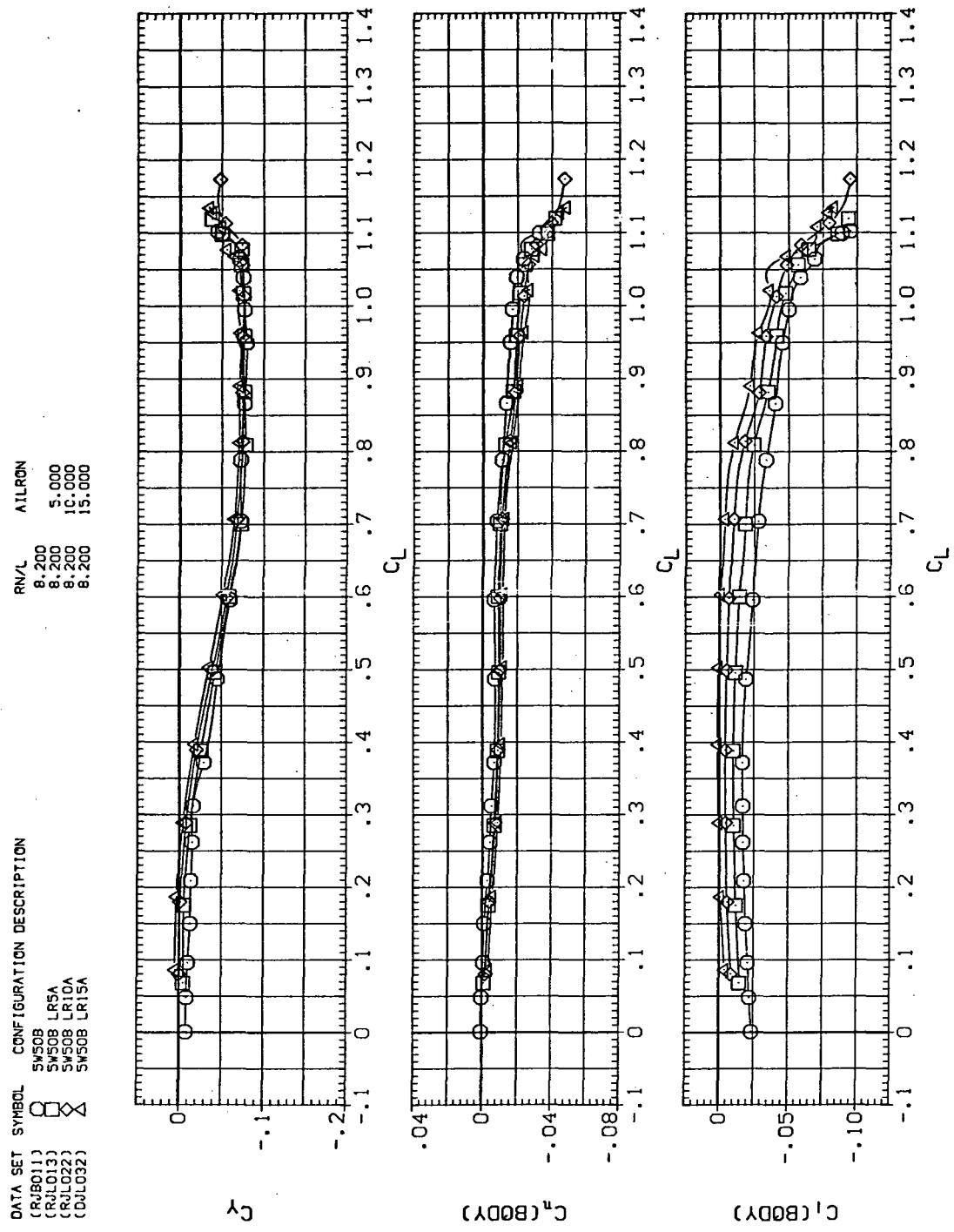
(d)  $L/D$  vs  $C_L$

Figure 30.—Continued.



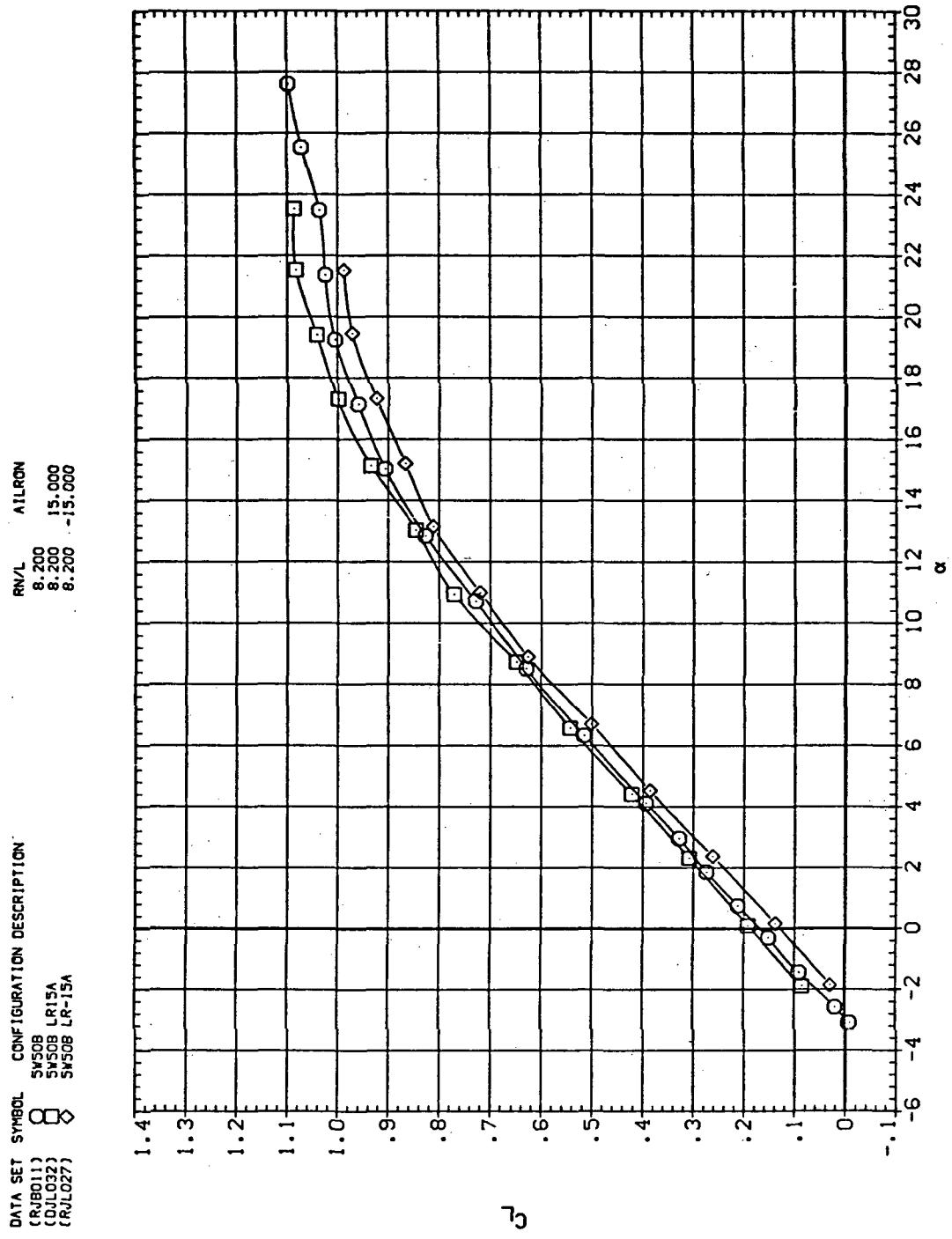
(e)  $C_Y$ ,  $C_n$ , and  $C_z$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

Figure 30.—Continued.



(f)  $C_Y$ ,  $C_n$ , and  $C_i$  vs  $C_L$  (positive  $\Delta\delta_a$ 's).

Figure 30.—Concluded.



(a)  $C_L$  vs  $\alpha$

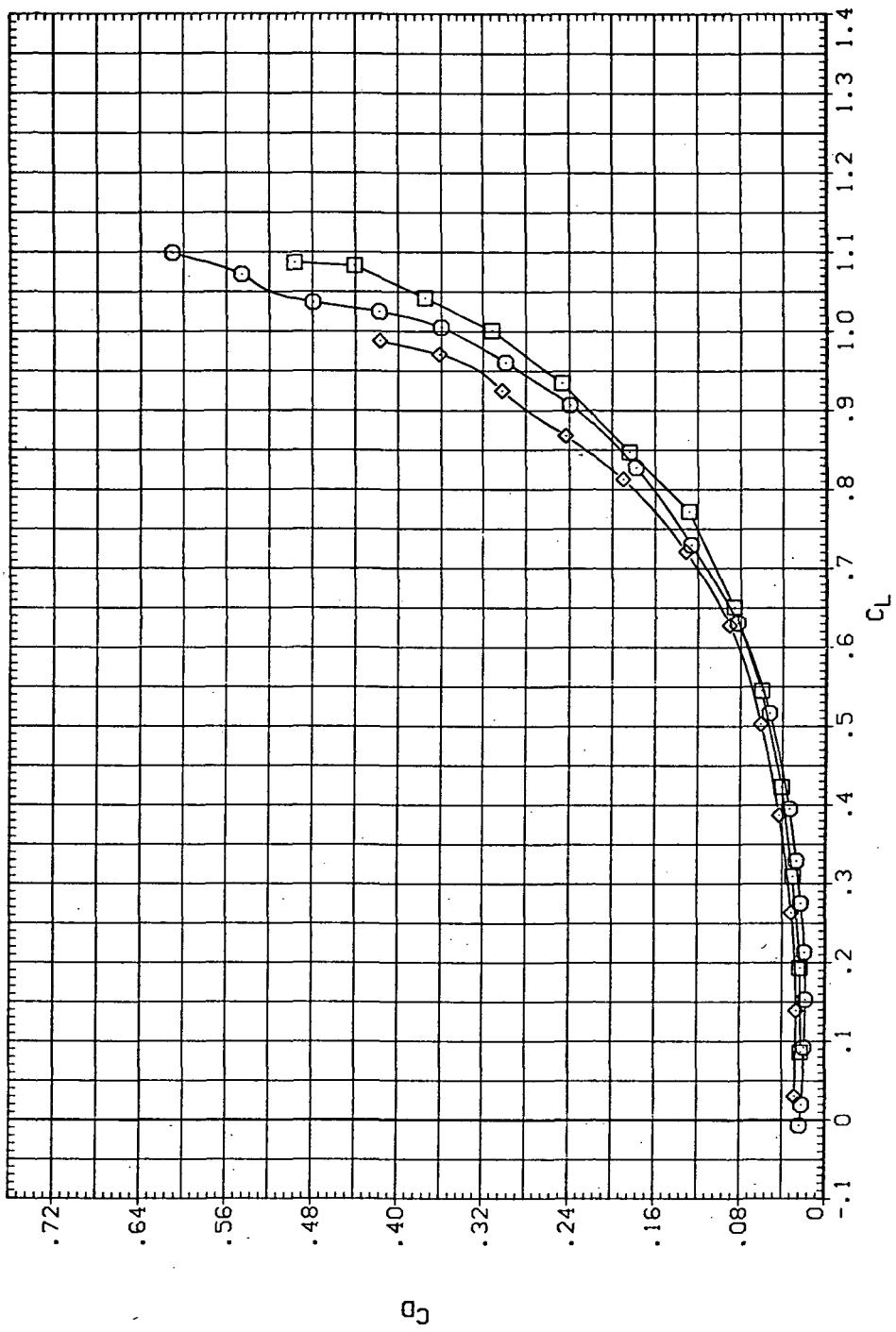
Figure 31.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 50^\circ, M = 0.80.$

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RJS011)	○	SW50B
(DJD032)	□	SW50B LR15A
(CJL027)	◊	SW50B LR-15A

RNL AILRON

8.200	15,000
8.200	-15,000
8.200	



(b)  $C_D$  vs  $C_L$

Figure 31.— Continued.

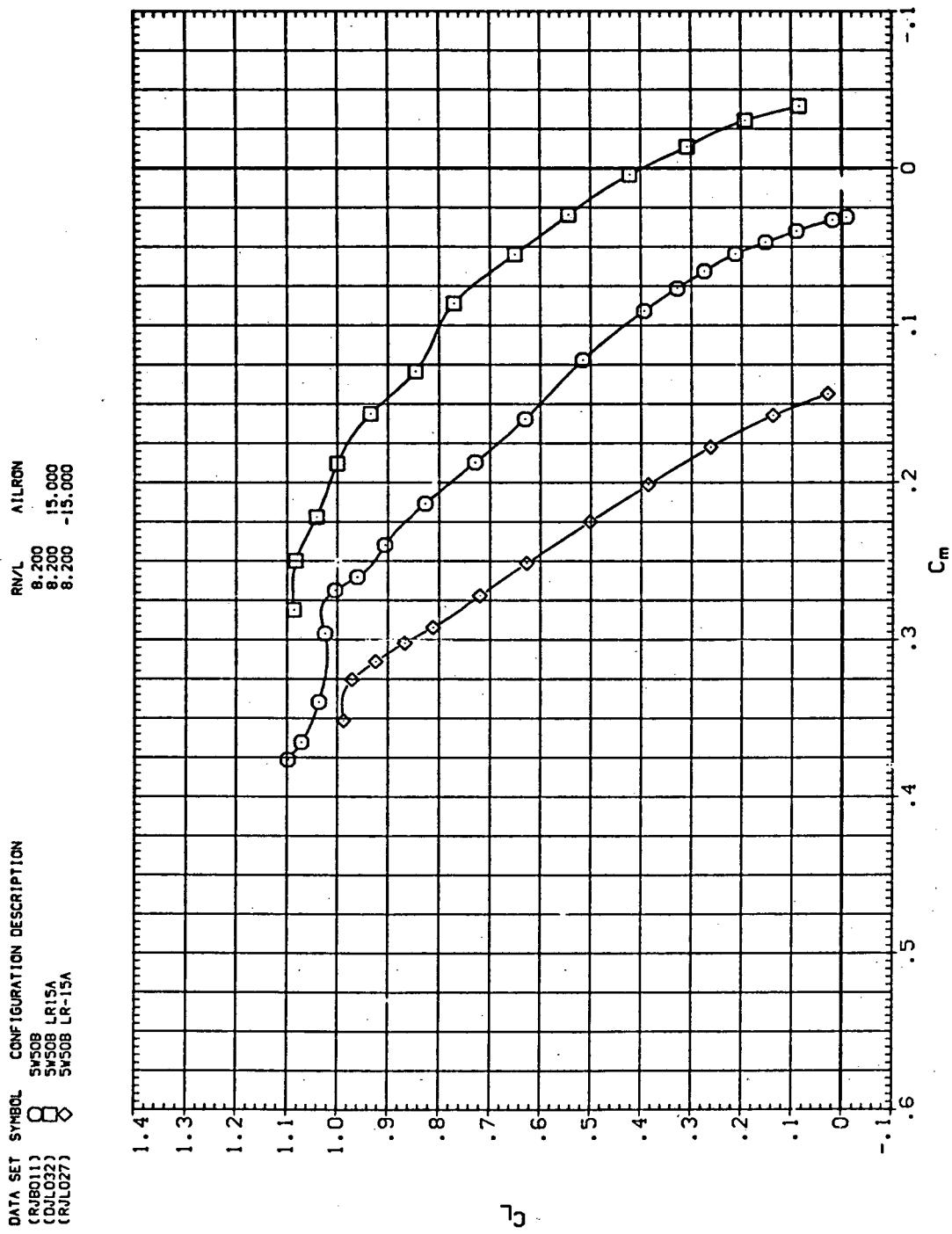
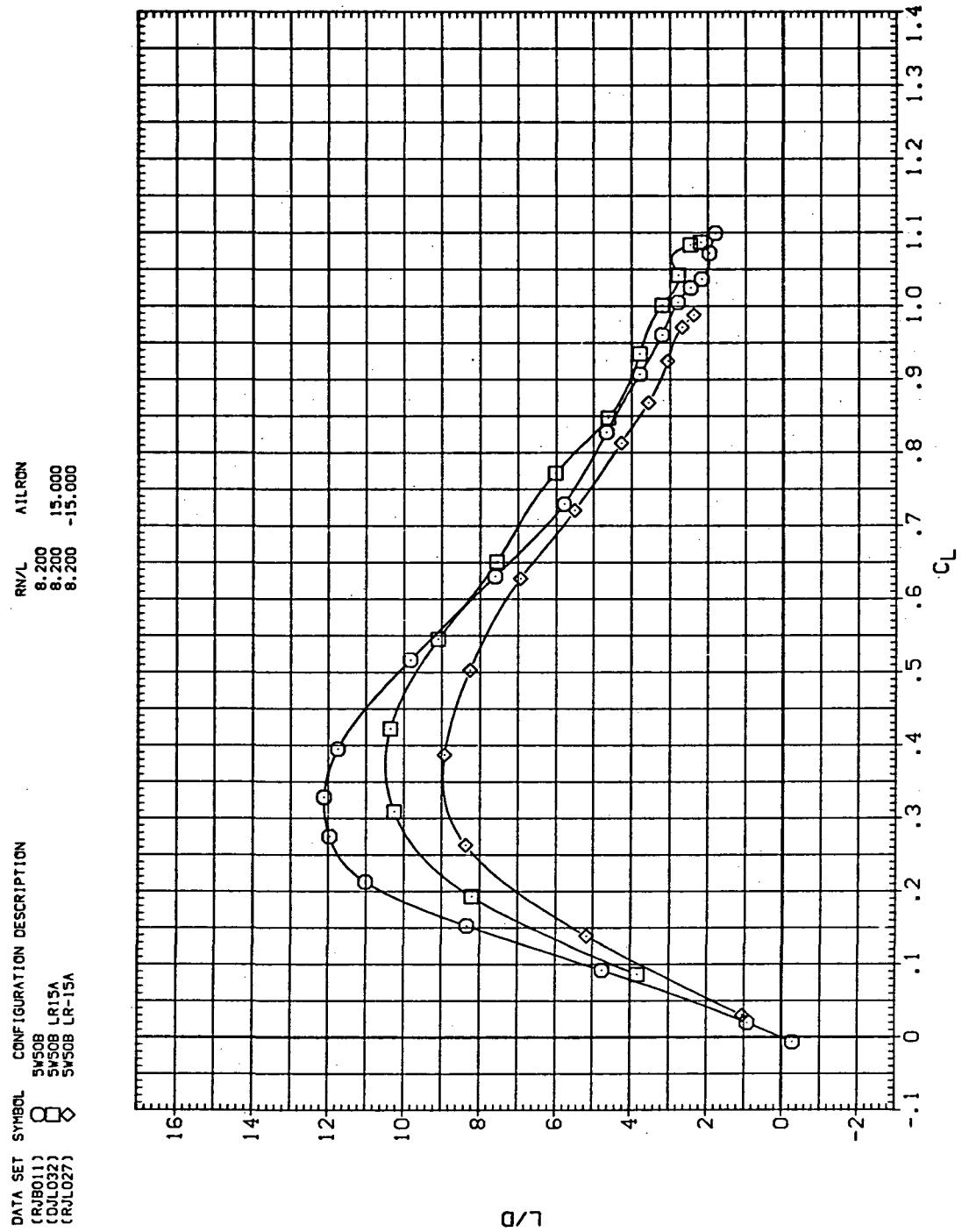
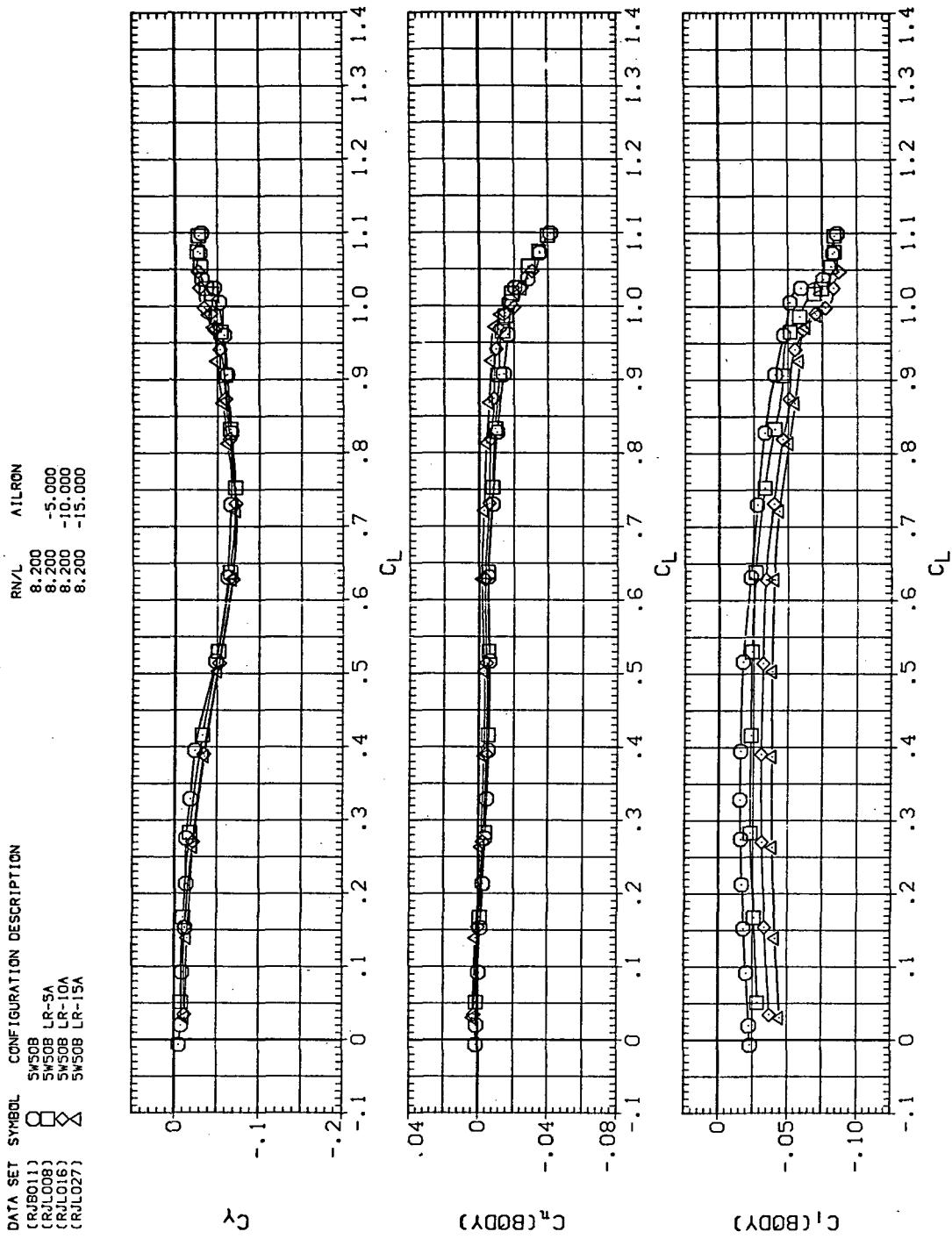
(c)  $C_L$  vs  $C_m$ 

Figure 31.—Continued.



(d)  $L/D$  vs  $C_L$

Figure 31.—Continued.



(e)  $C_Y$ ,  $C_n$ , and  $C_d$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

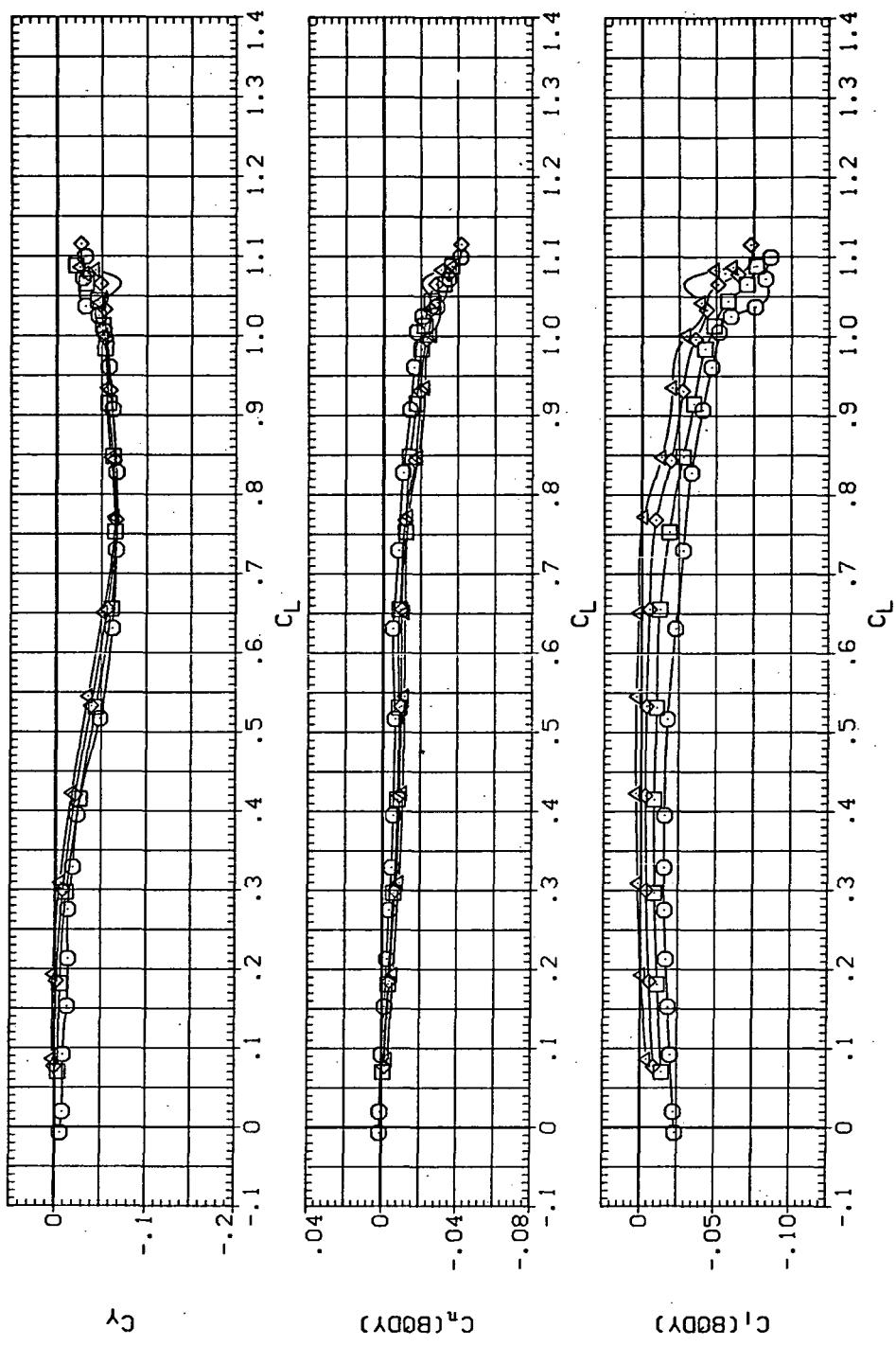
Figure 31.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RLD011)	○	SW50B
(RLD013)	□	SW50B
(RLD022)	×	SW50B
(DL032)	△	SW50B

RN/L ALIENON

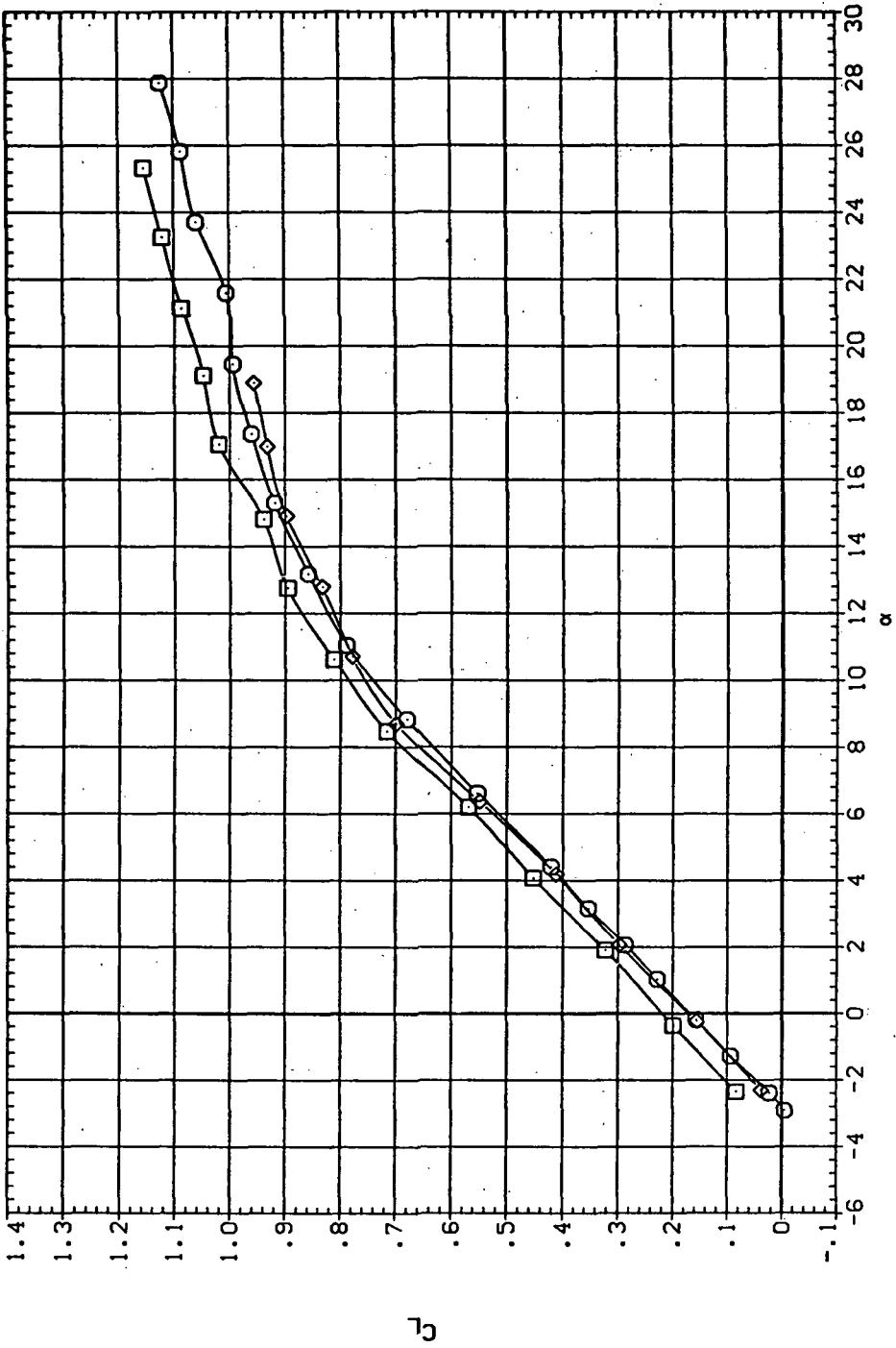
8.200	5.000
8.200	10.000
8.200	15.000



(f)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (positive  $\Delta\delta_a$ 's).

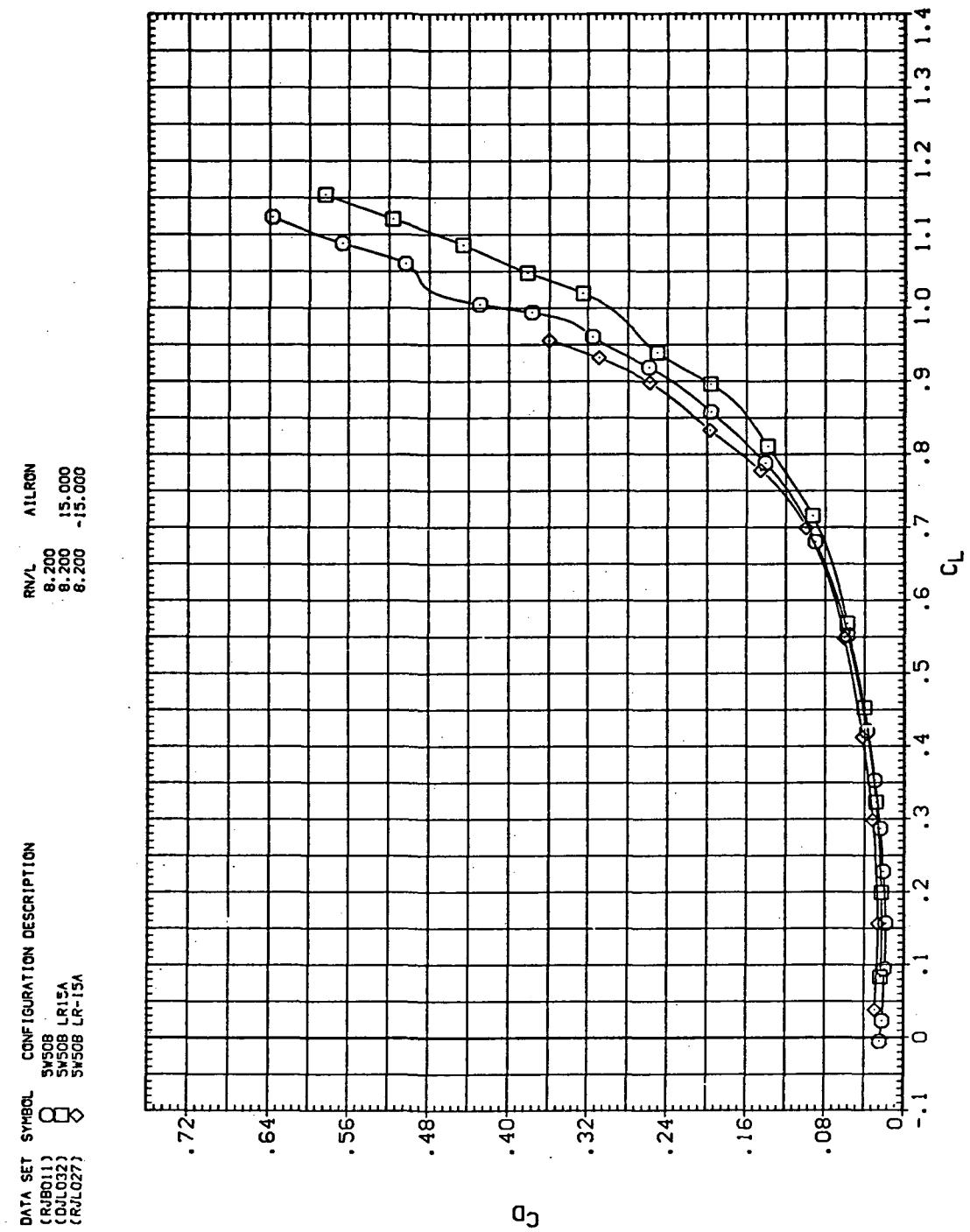
Figure 31.— Concluded.

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(RIB011)		SW50B
(DUL022)		SW50B LR-15A
(RJL027)		SW50B LR-15A



(a)  $C_L$  vs  $\alpha$

Figure 32.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 50^\circ, M = 0.90$ .



(b)  $C_D$  vs  $C_L$

Figure 32.—Continued.

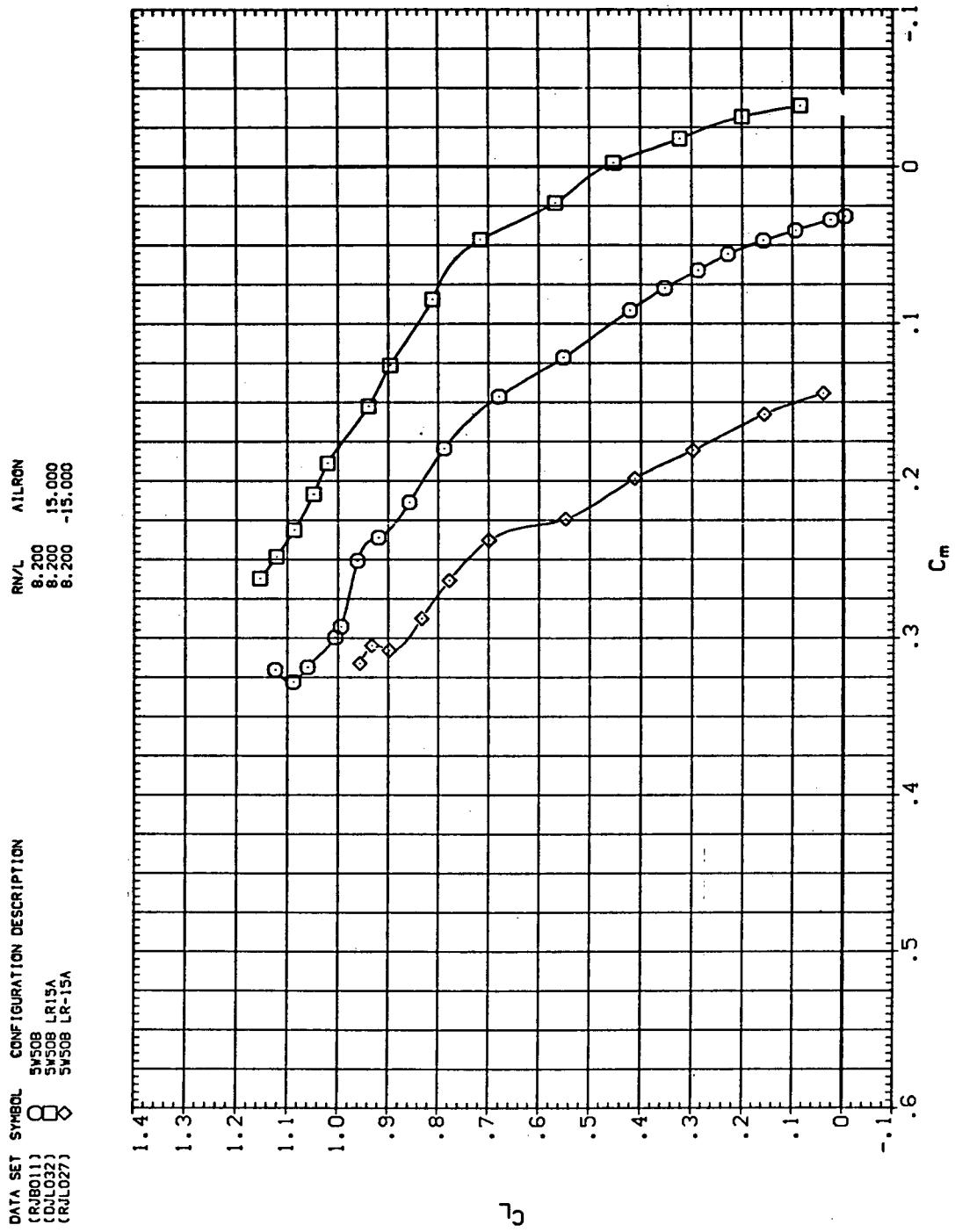
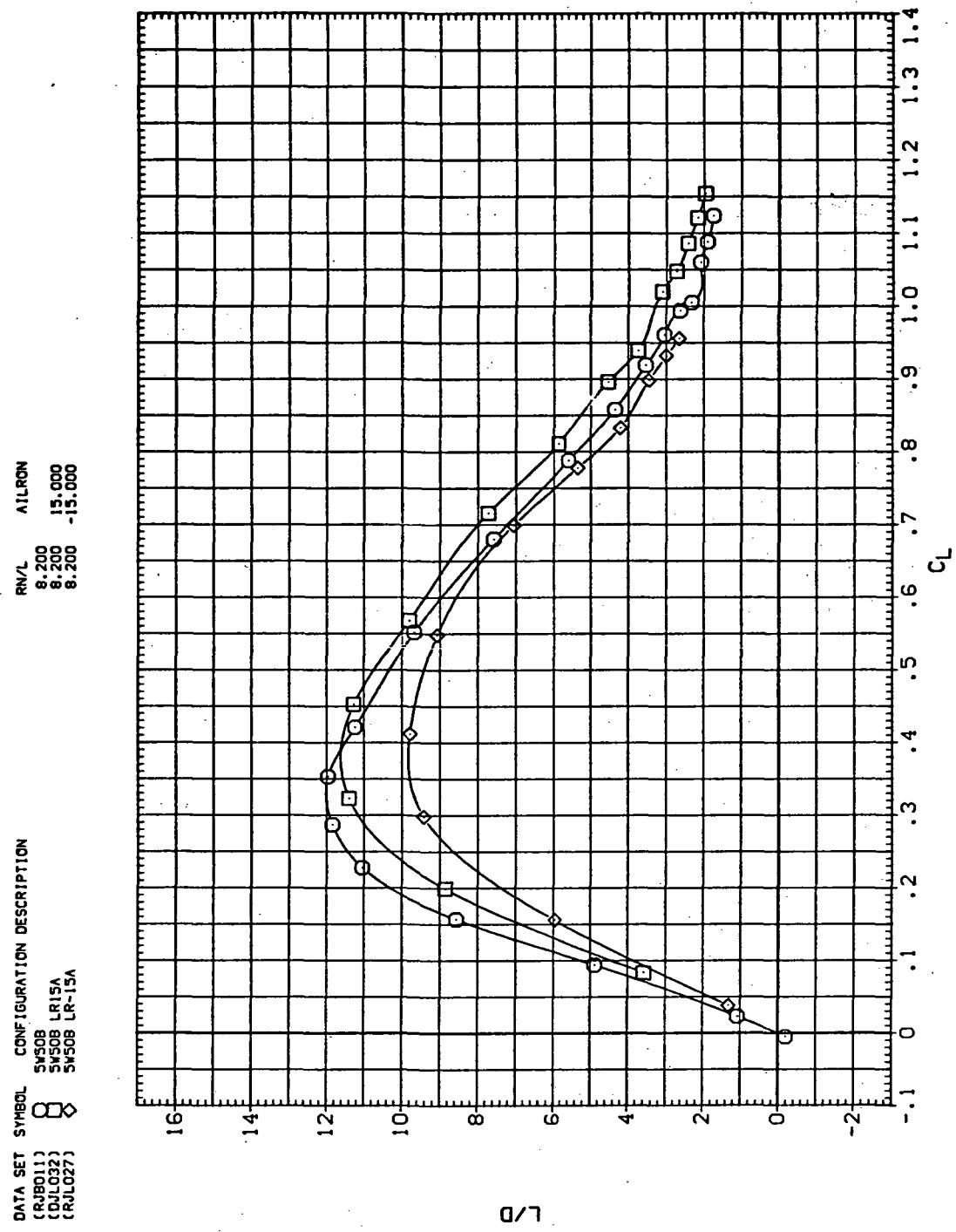
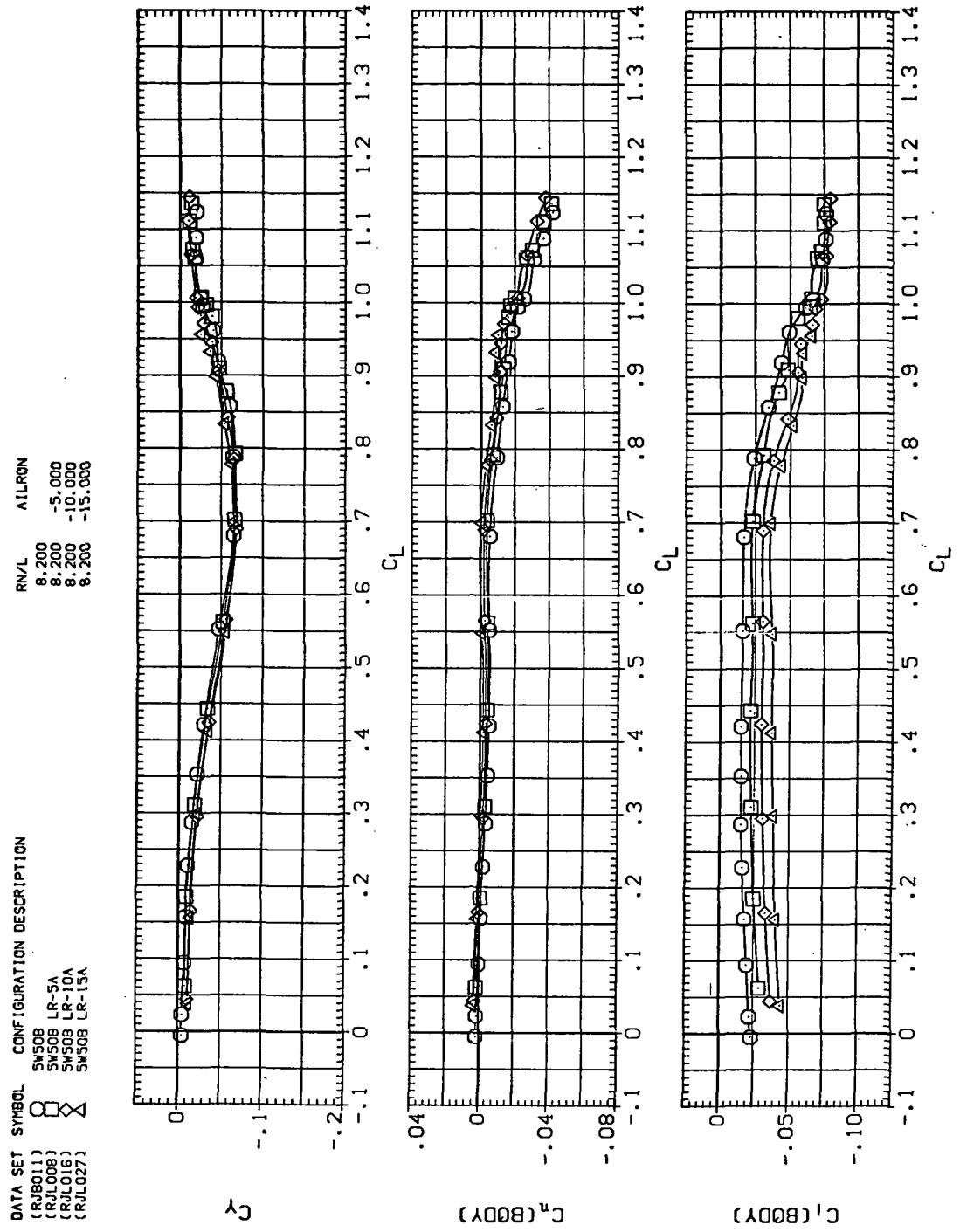
(c)  $C_L$  vs  $C_m$ 

Figure 32.—Continued.



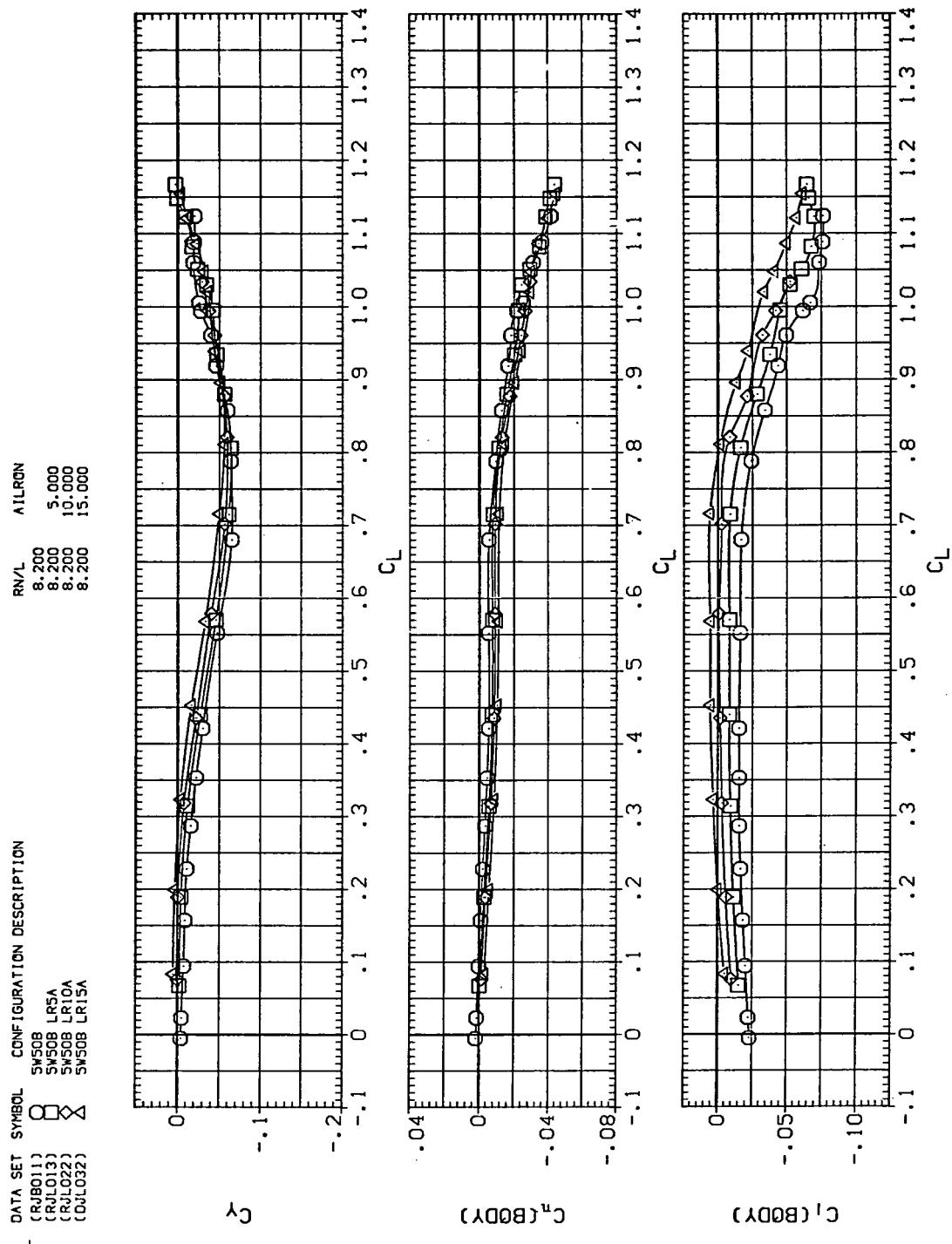
(d)  $L/D$  vs  $C_L$

Figure 32.—Continued.



(e)  $C_Y$ ,  $C_n$ , and  $C_1$  vs.  $C_L$  (negative  $\Delta\delta_a$ 's).

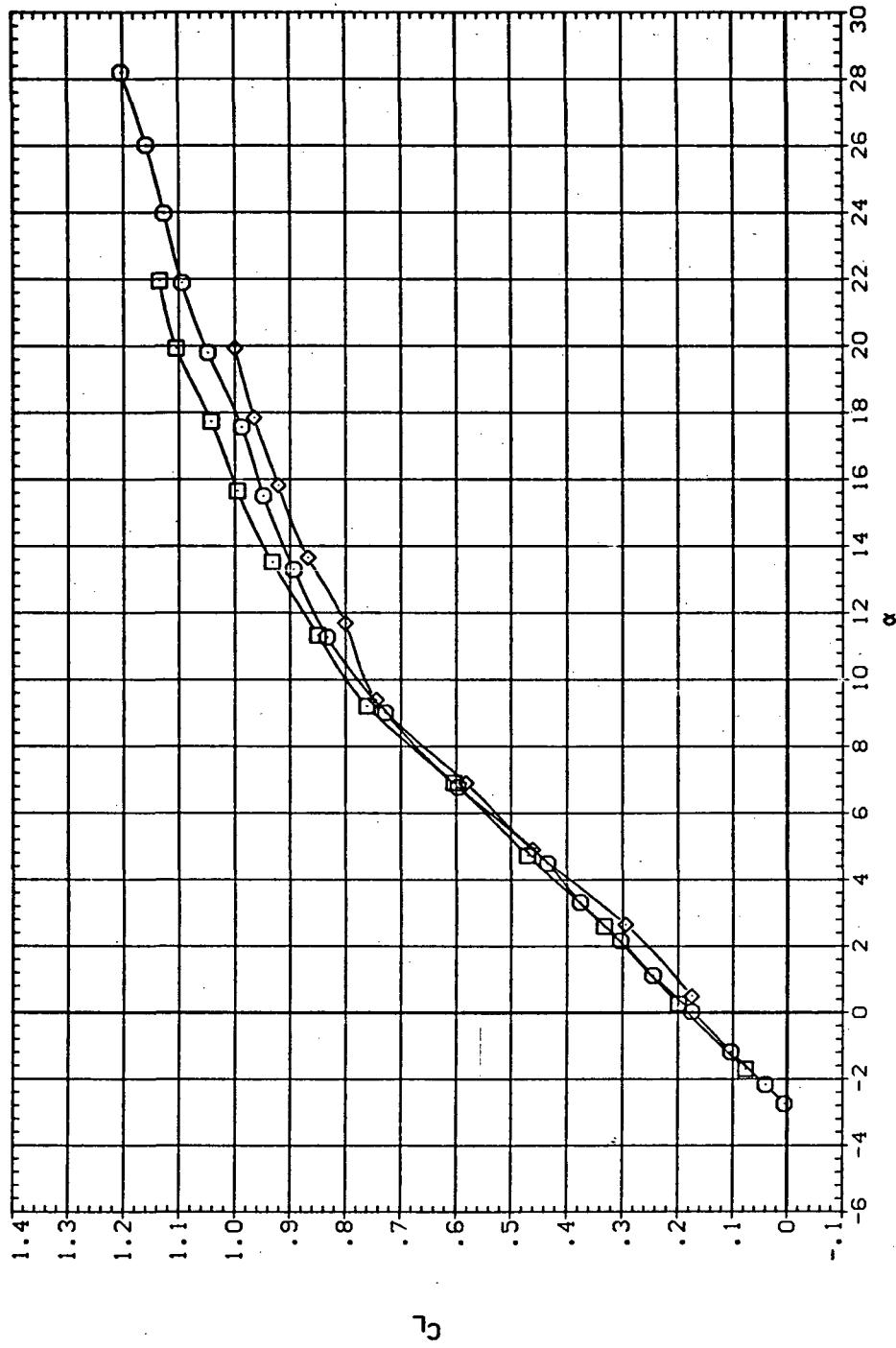
Figure 32.—Continued.



(f)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (positive  $\Delta\delta_a$ 's).

Figure 32.— Concluded.

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
RJL011		SW508 SW508 LR15A
CDJL032		SW508 SW508 LR-15A
RJL027		



(a)  $C_L$  vs  $\alpha$

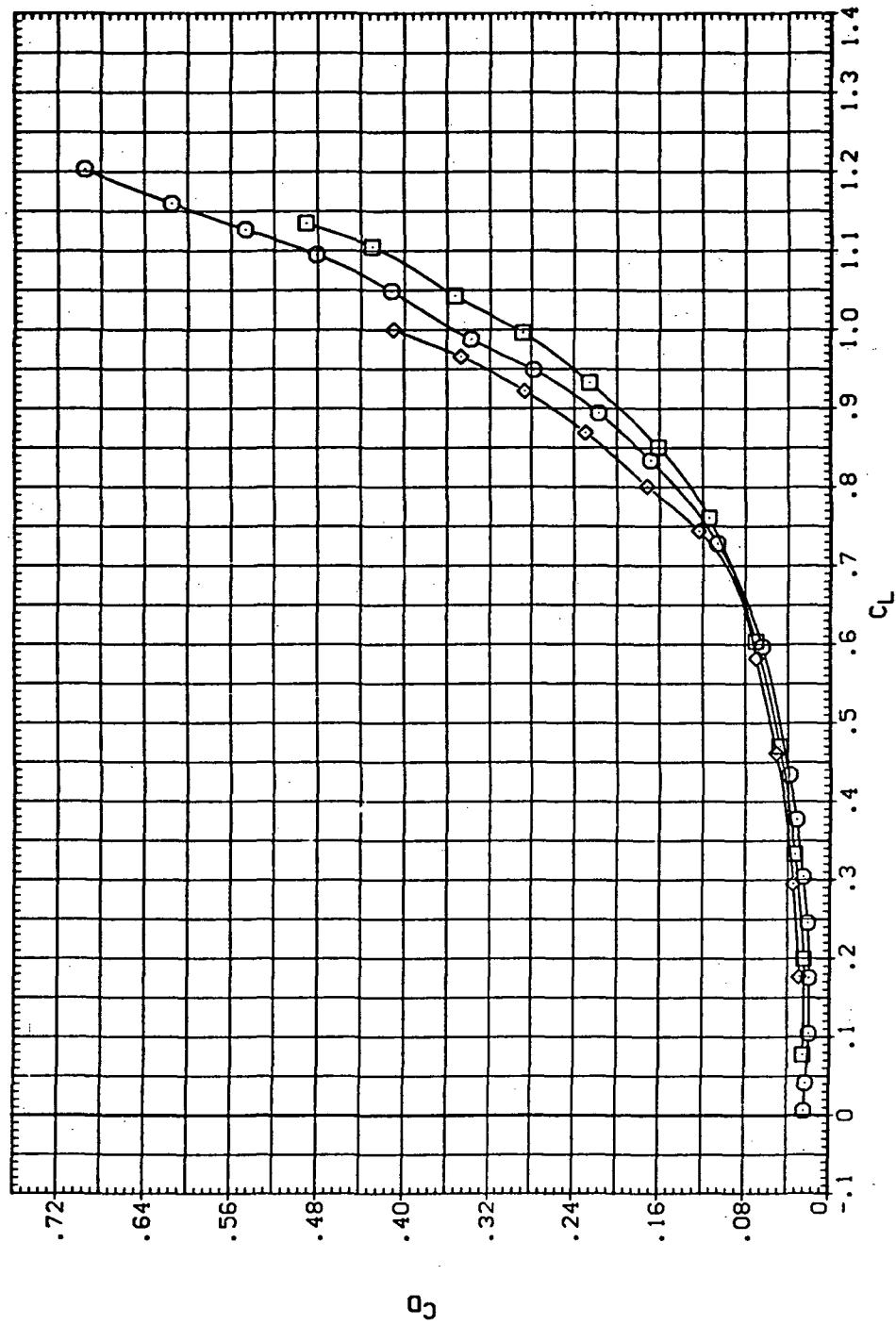
Figure 33.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 50^\circ, M = 0.95$ .

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RJB011)	○	SW508
(QJL032)	□	SW508 LR15A
(RJL027)	◇	SW508 LR15A

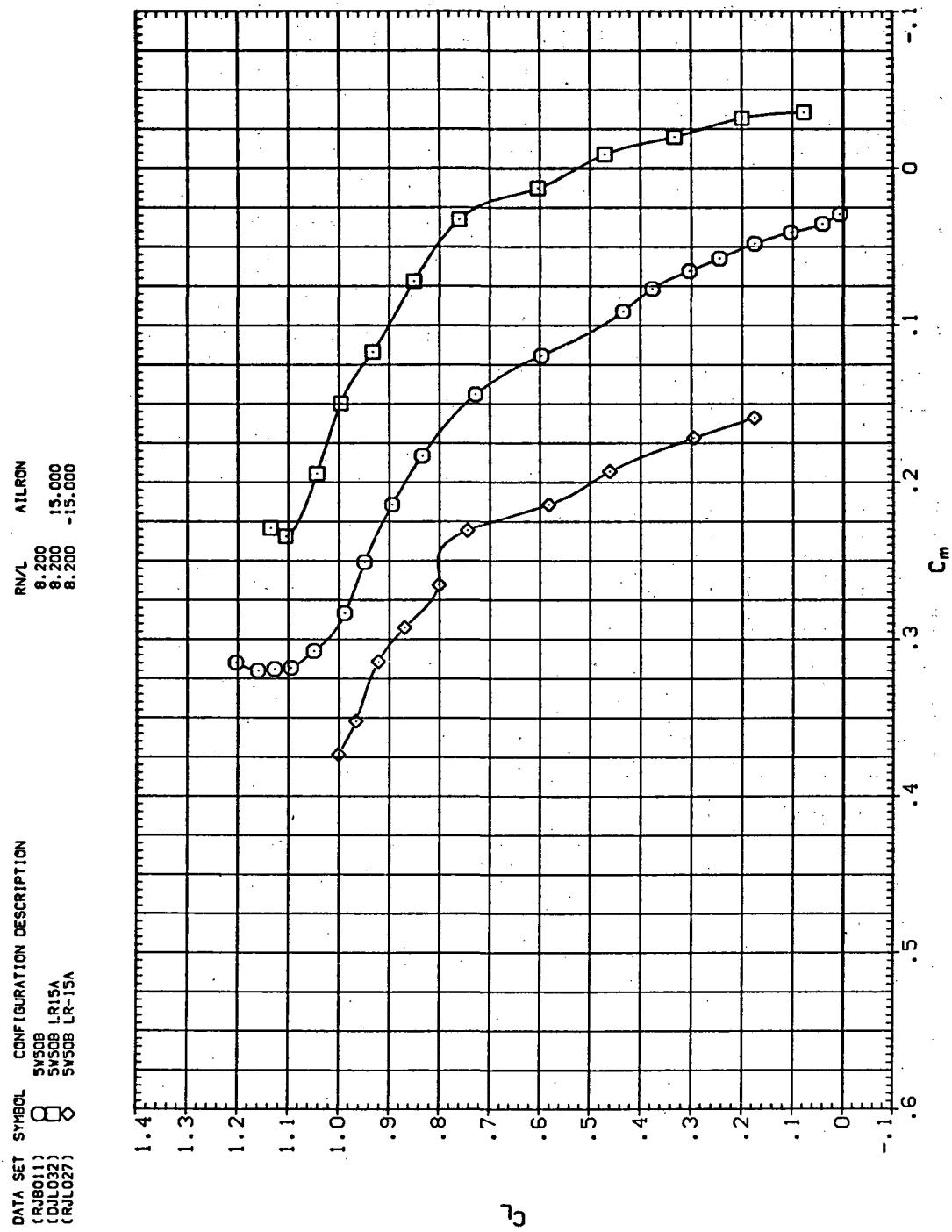
RN/L AILRON

8.200	15.000
8.200	-15.000
8.200	



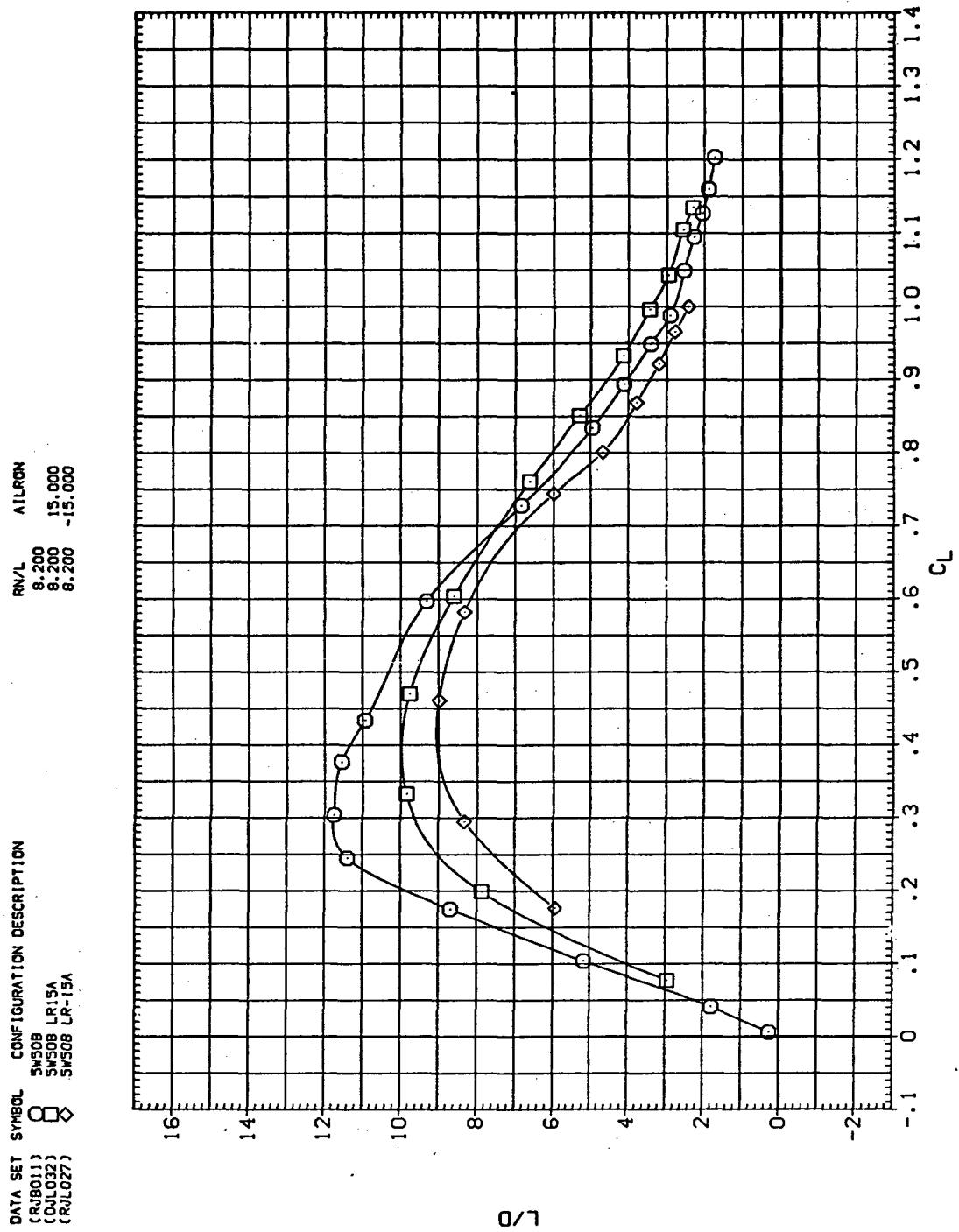
(b)  $C_D$  vs  $C_L$

Figure 33.— Continued.



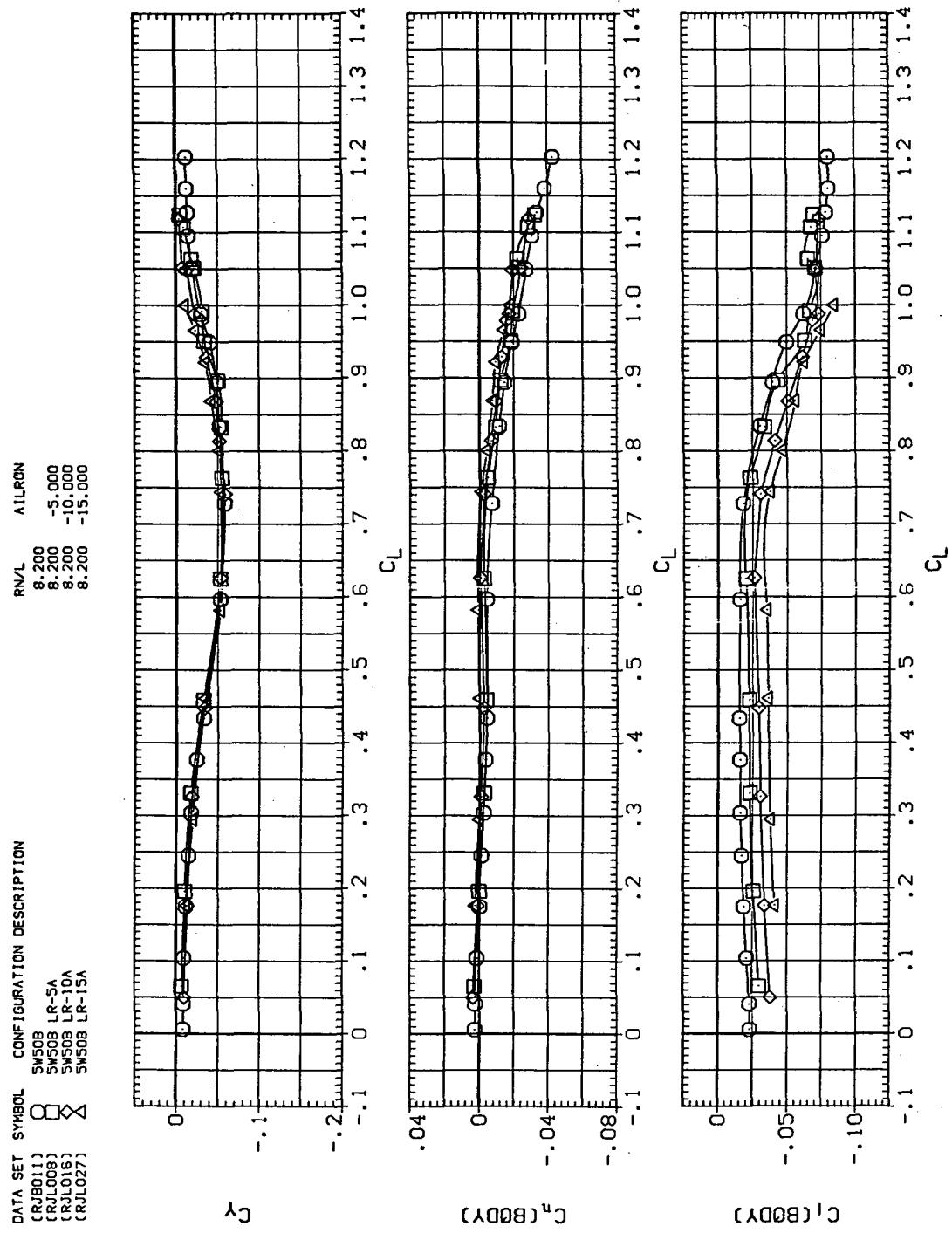
(c)  $C_L$  vs  $C_m$

Figure 33.—Continued.



(d)  $L/D$  vs  $C_L$

Figure 33.—Continued.



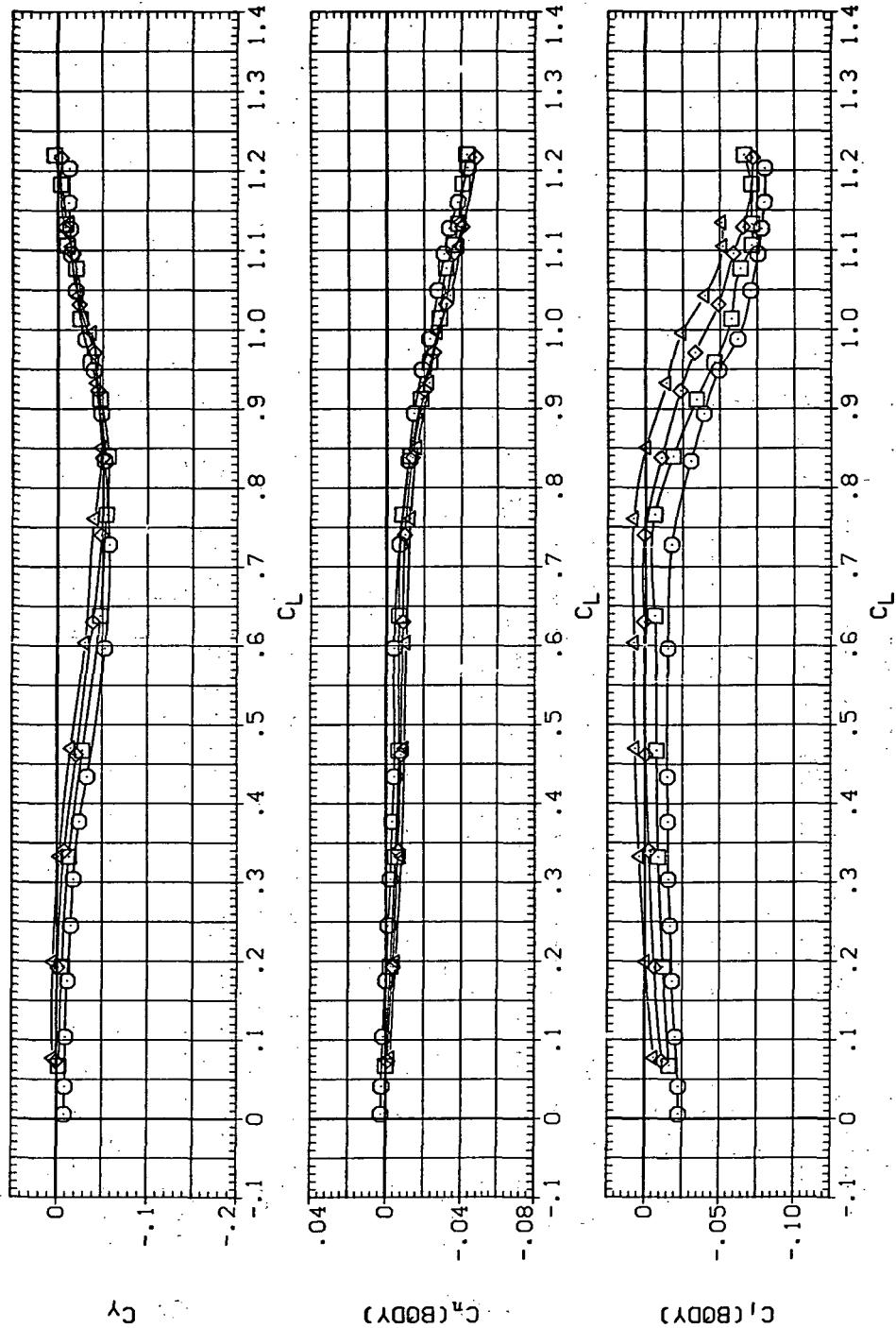
(e)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

Figure 33.—Continued.

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
RJB0111	○	SW50B
RJB0133	□	SW50B LRSA
RJL0122	×	SW50B LR10A
DJL0323	×	SW50B LR15A

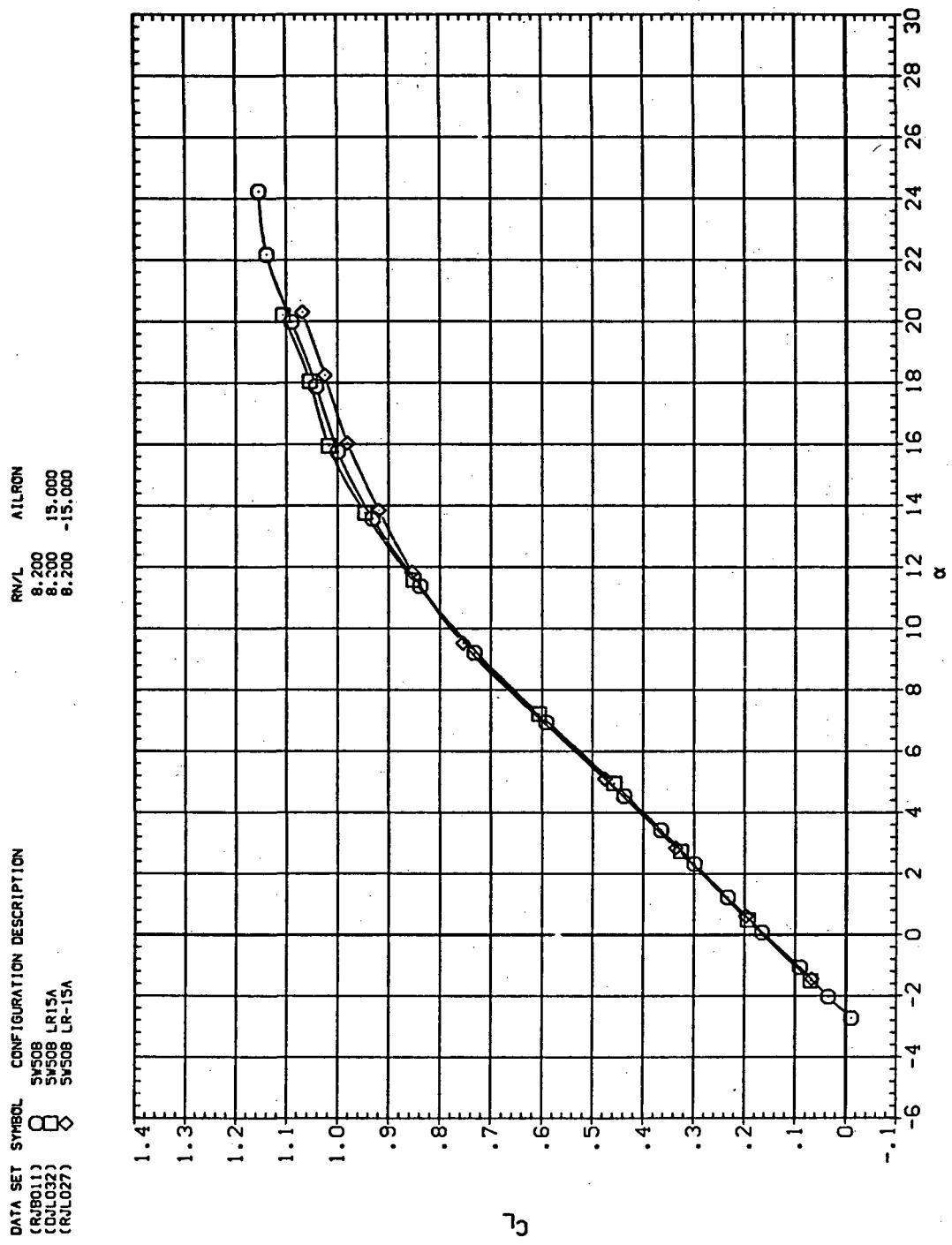
R/V/L AILERON

8.200	5.000
8.200	5.000
8.200	15.000
8.200	15.000



(f)  $C_Y$ ,  $C_n$ , and  $C_L$  vs  $C_L$  (positive  $\Delta\delta_a$ 's).

Figure 33.— Concluded.



(a)  $C_L$  vs  $\alpha$

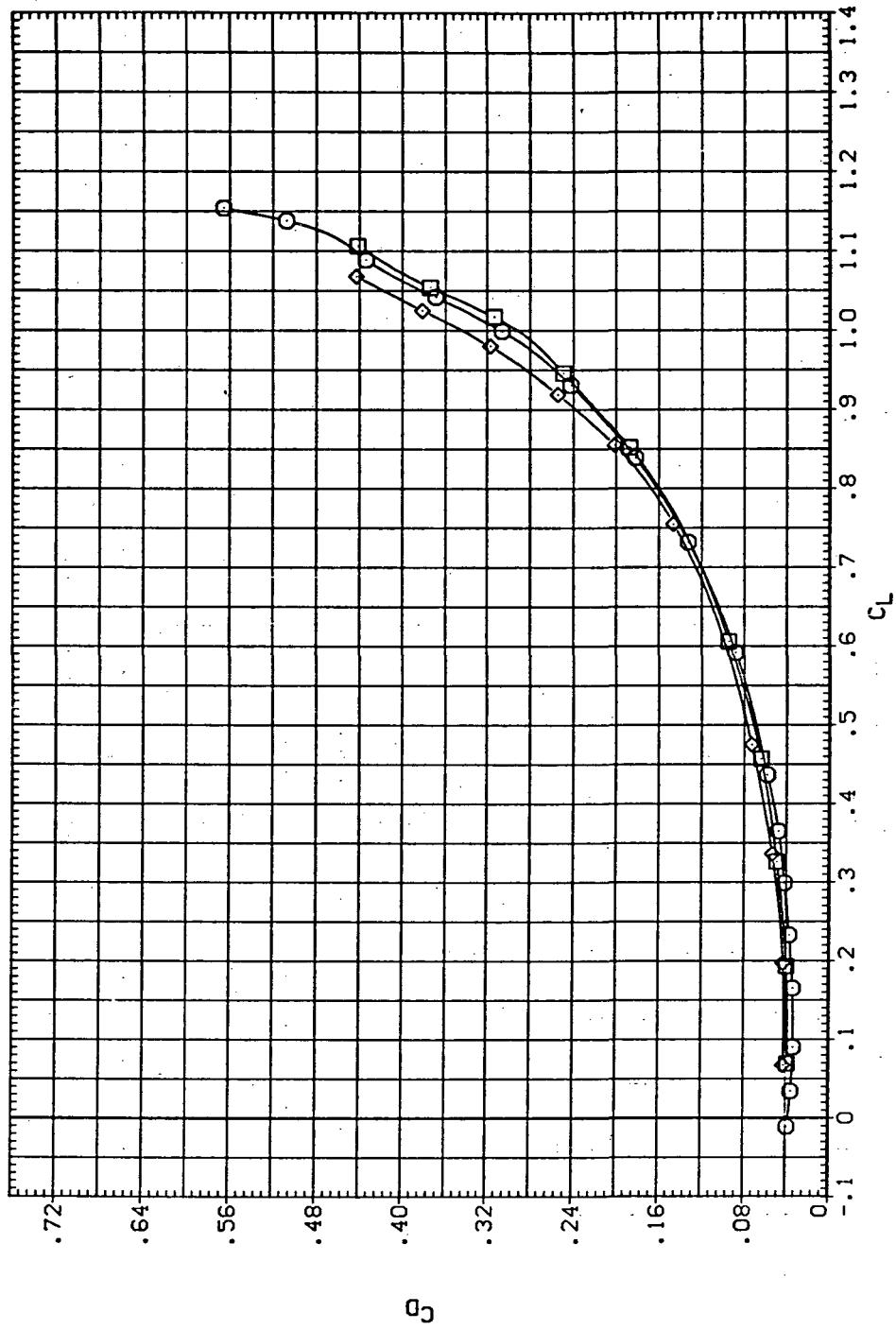
Figure 34.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 50^\circ, M = 1.1.$

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RJU011)	○	SW50B
(DUJ032)	□	SW50B LR15A
(RUL027)	◇	SW50B LR-15A

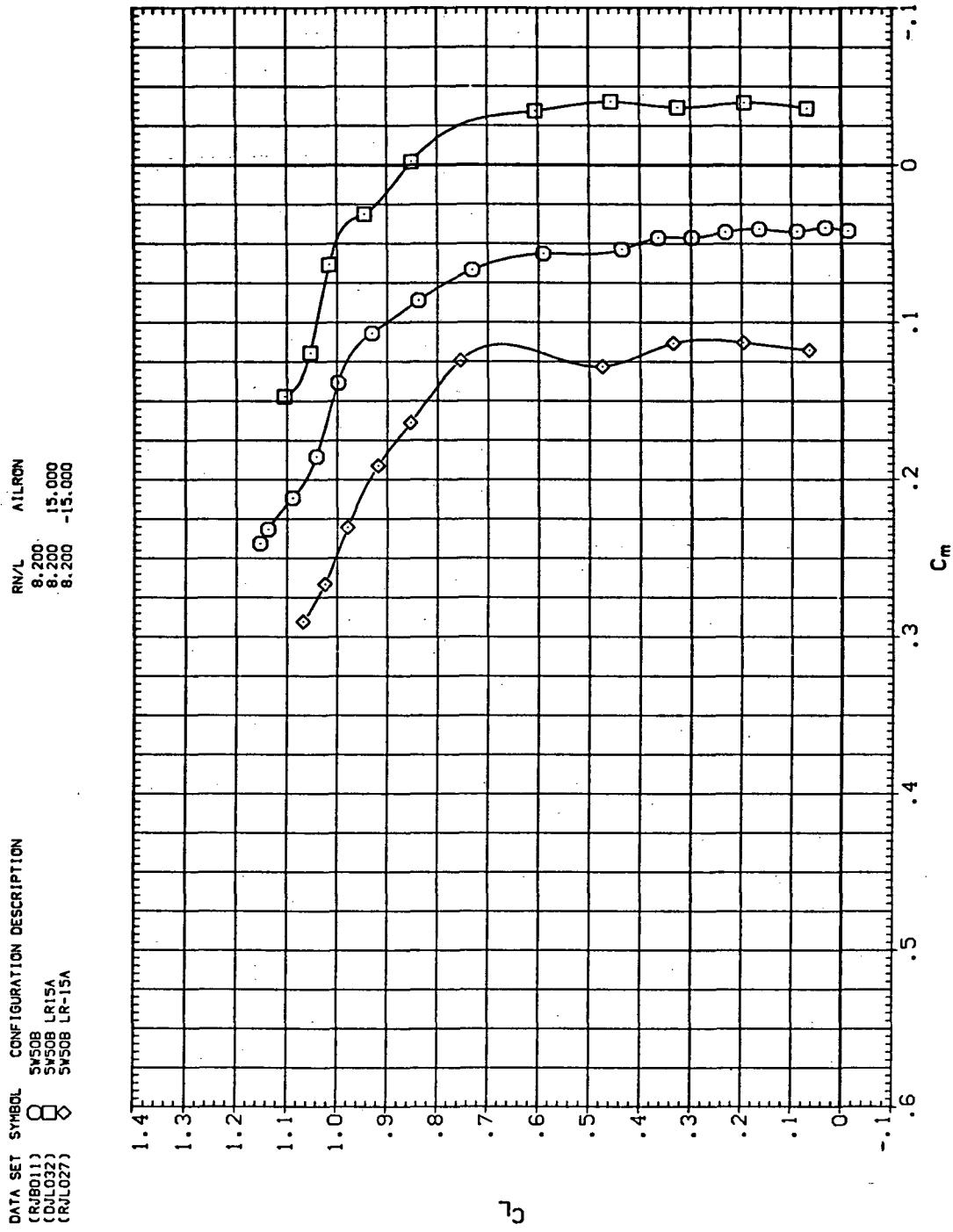
RN/L AIRCON

8.200	15.000
8.200	-15.000
8.200	



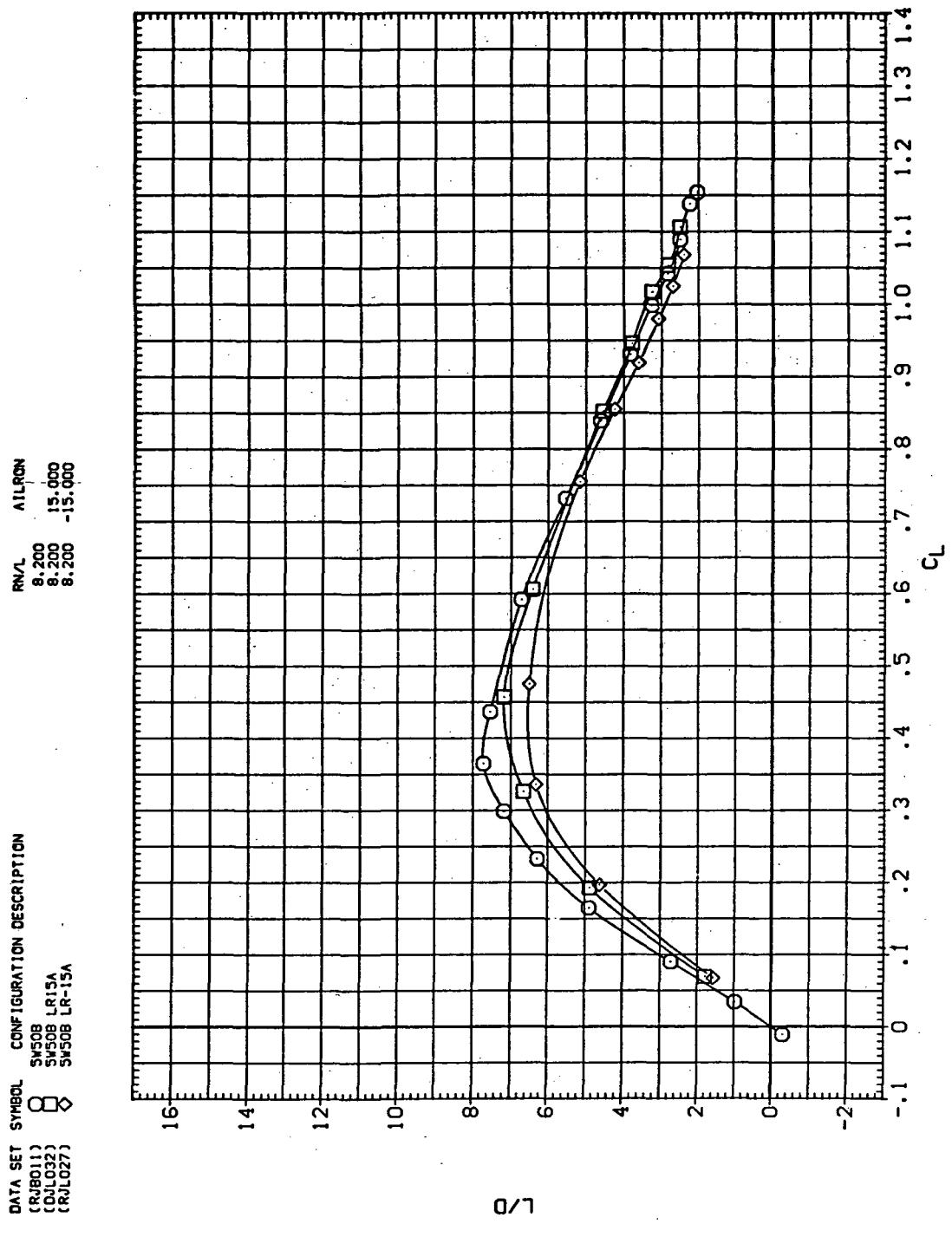
(b)  $C_D$  vs  $C_L$

Figure 34.—Continued.



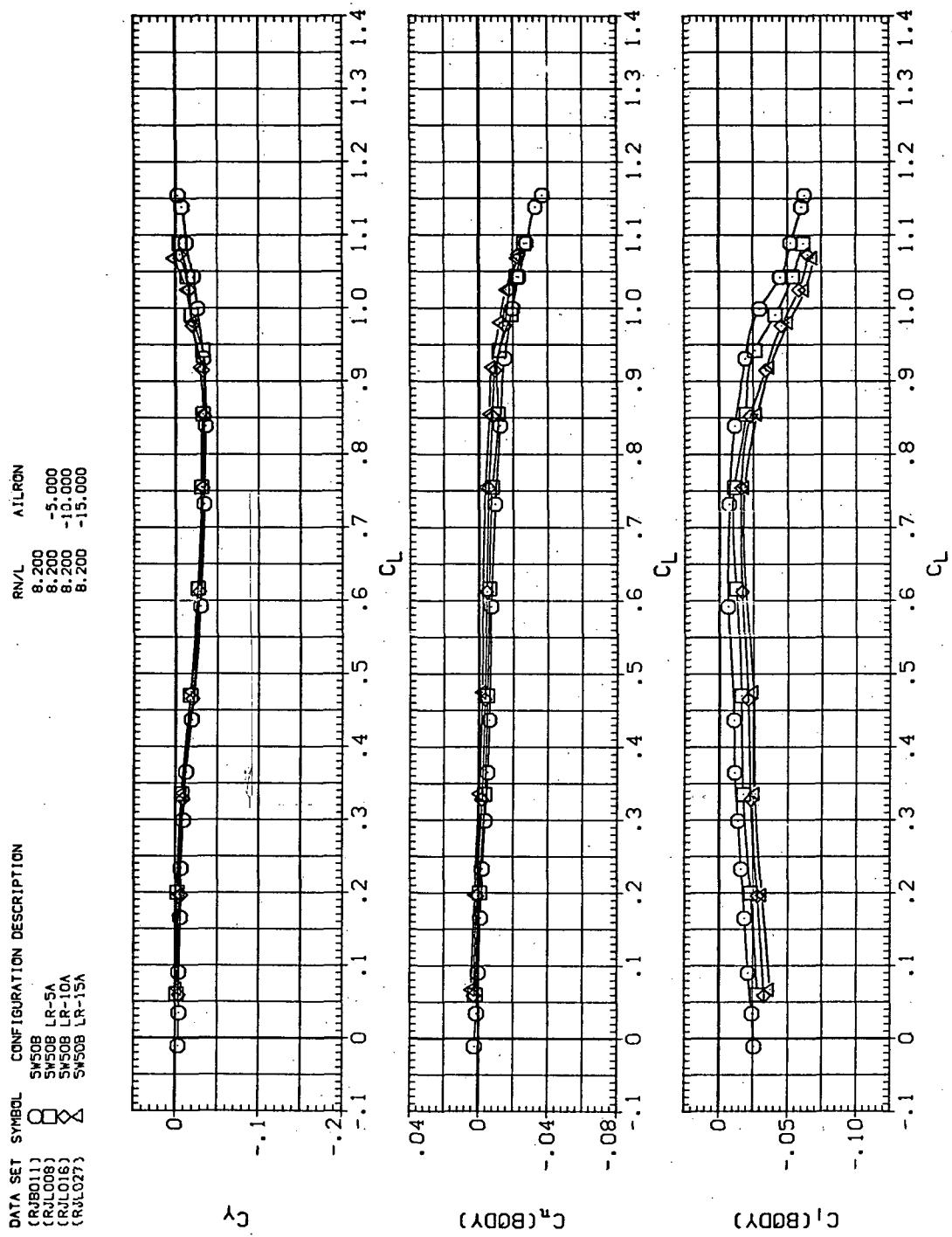
(c)  $C_L$  vs  $C_m$

Figure 34.—Continued.



(d)  $L/D$  vs  $C_L$

Figure 34.—Continued.



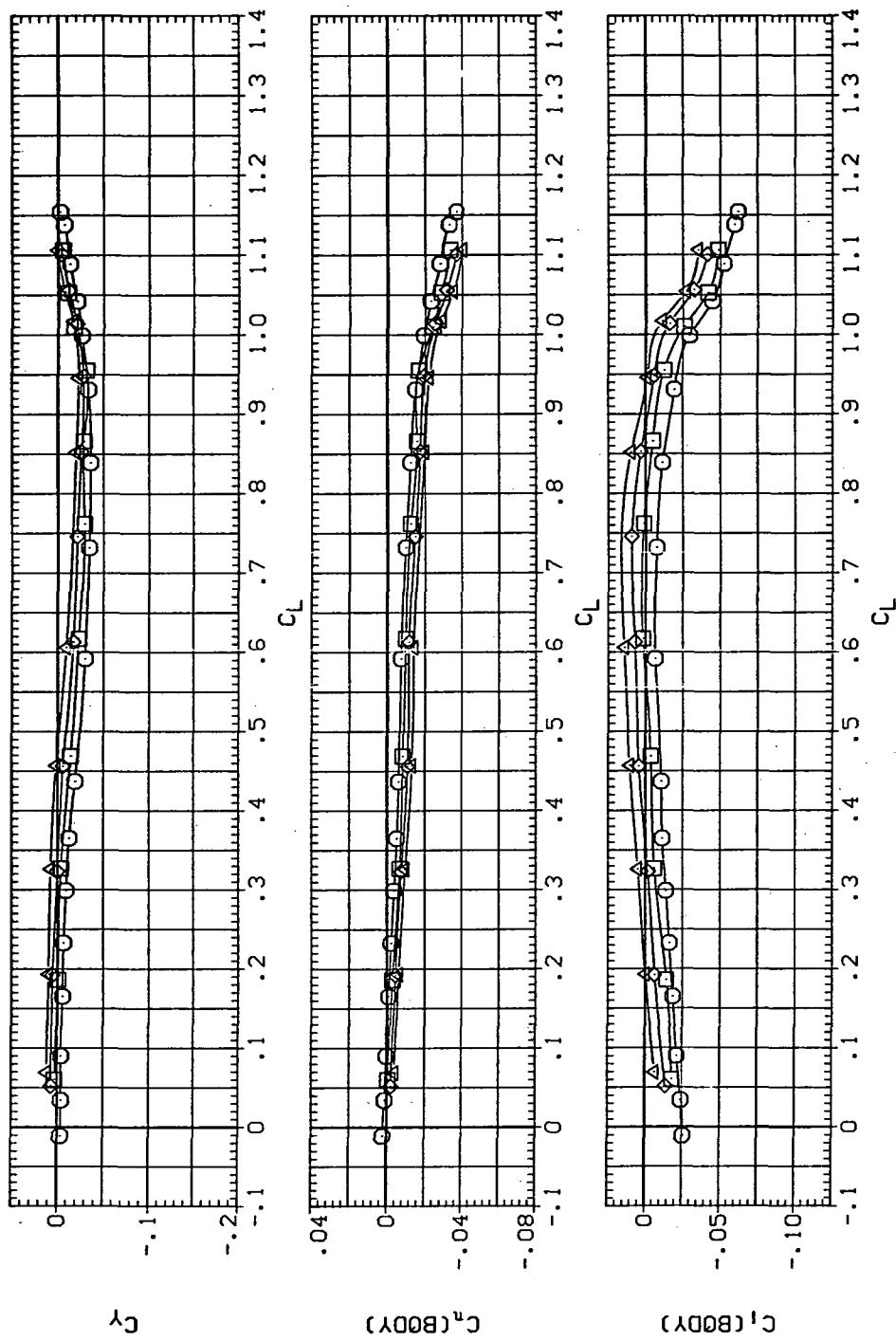
(e)  $C_Y$ ,  $C_n$ , and  $C_L$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

Figure 34.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RAE011)	○	SV50B	RN/L	8.200
(RAE013)	□	SV50B	AIRDN	5.000
(RLD022)	△	SV50B	8.200	
(DL032)	◇	SV50B	10.000	
		LR5A	8.200	
		LR10A	15.000	
		LR15A		

RN/L  
AIRDN



(f)  $C_Y$ ,  $C_n$ , and  $C_L$  vs  $C_L$  (positive  $\Delta\delta_a$ 's).

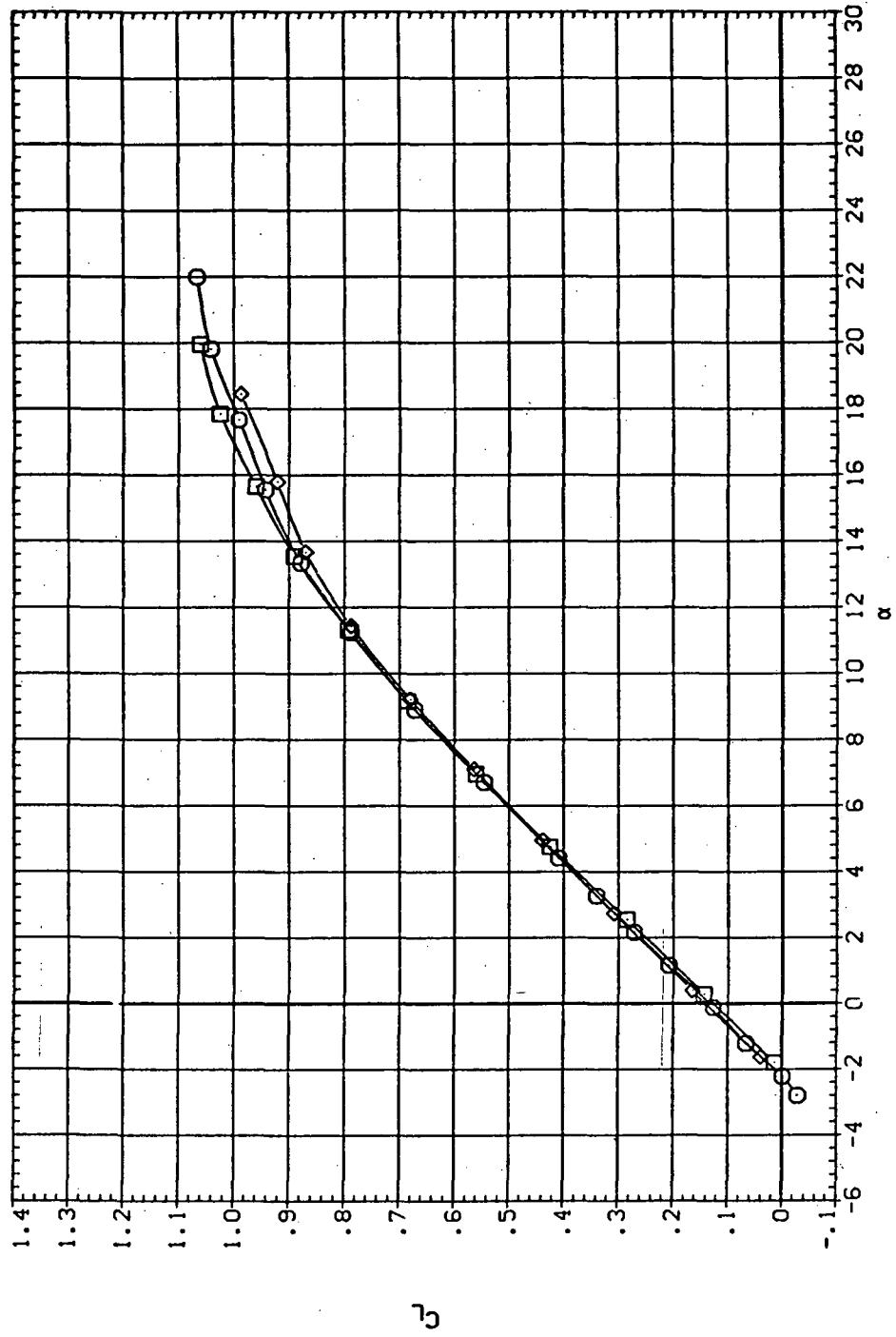
Figure 34.— Concluded.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RAB011)	○	SV50B	AILERON
(QJL032)	◇	SV50B	8.200 15.000
(RJL027)	□	SV50B LR15A	8.200 -15.000

RN/L AILERON

8.200	15.000
8.200	-15.000



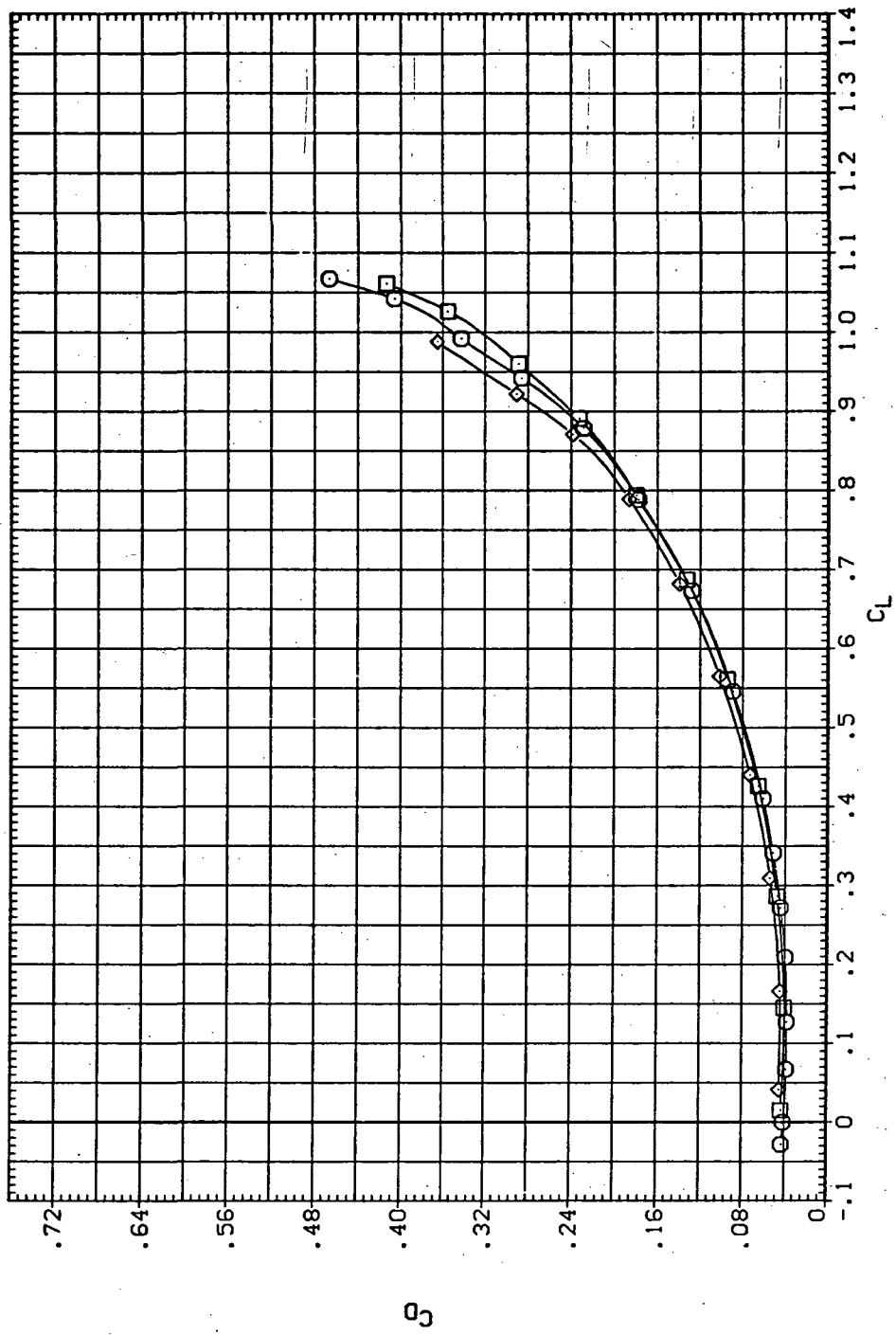
(a)  $C_L$  vs  $\alpha$

Figure 35.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 50^\circ, M = 1.20.$

DATA SET SYMBOL CONFIGURATION DESCRIPTION

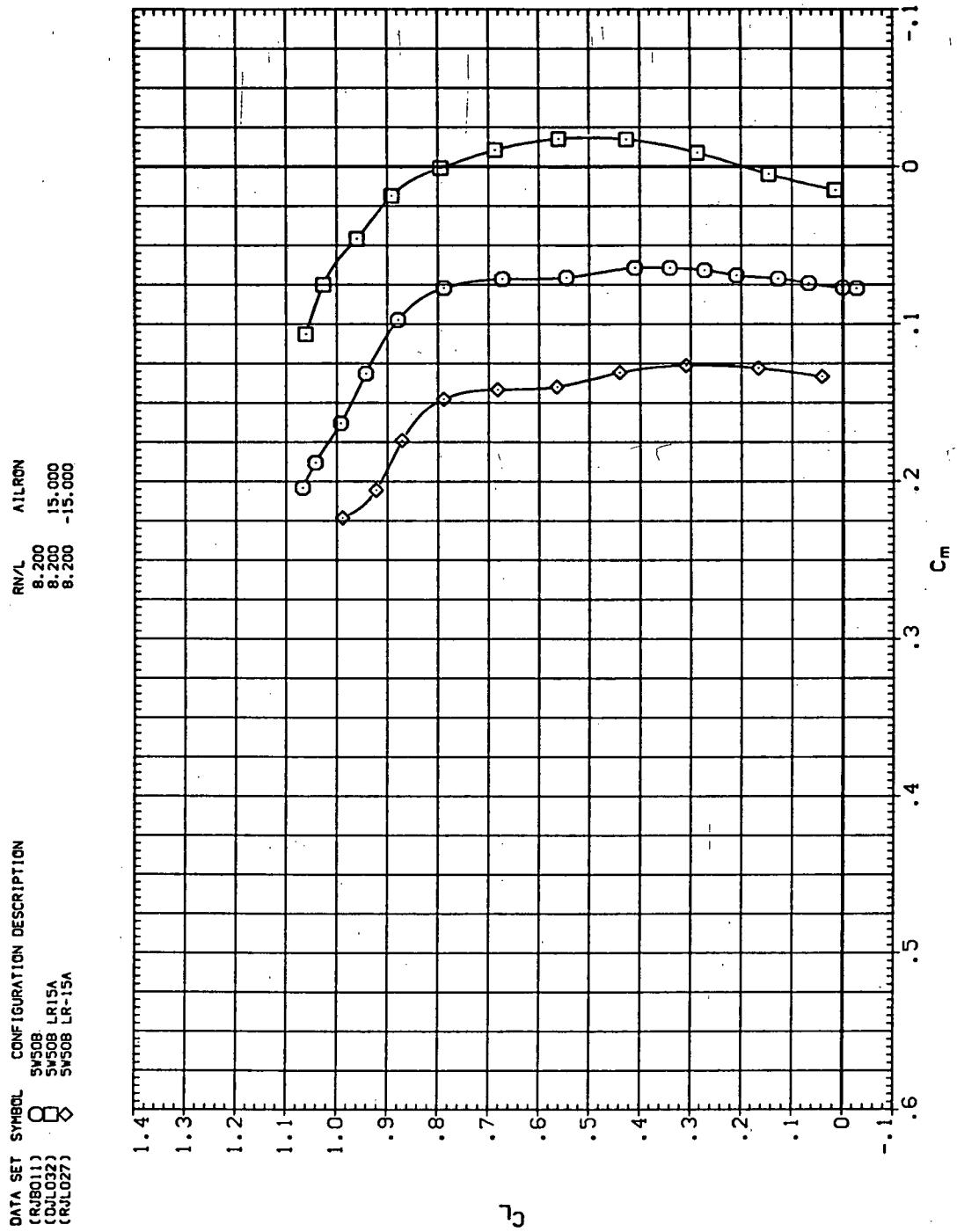
(CRJ-B011)	○	SN50B	LR15A
(CRJ-L032)	△	SN50B	LR-15A
(CRJ-L027)	◆	SN50B	LR-15A

AIRIRON  
RH/L      8.200      8.200      15.000  
            8.200      8.200      -15.000



(b)  $C_D$  vs  $C_L$

Figure 35.—Continued.



(c)  $C_L$  vs  $C_m$

Figure 35.—Continued.

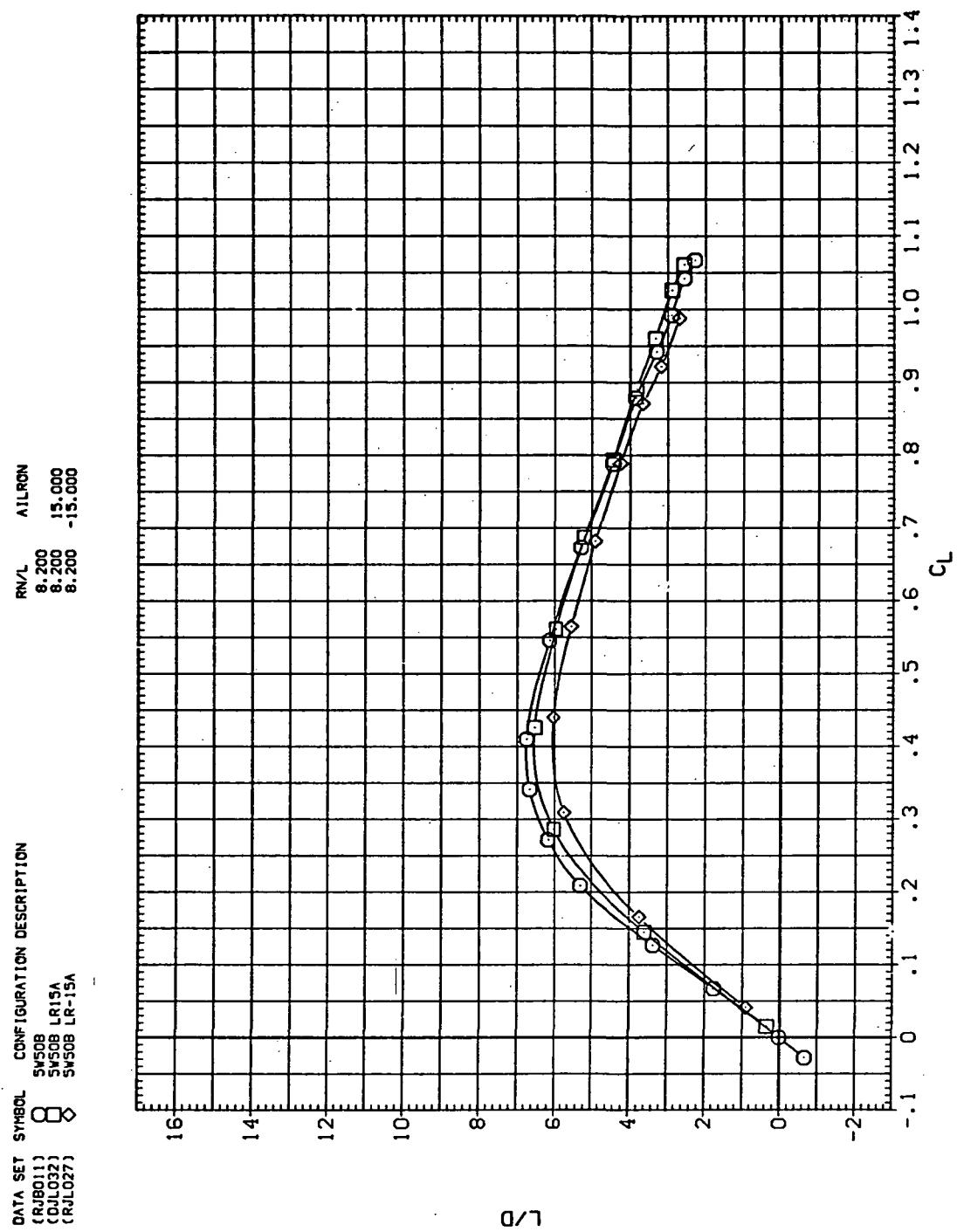
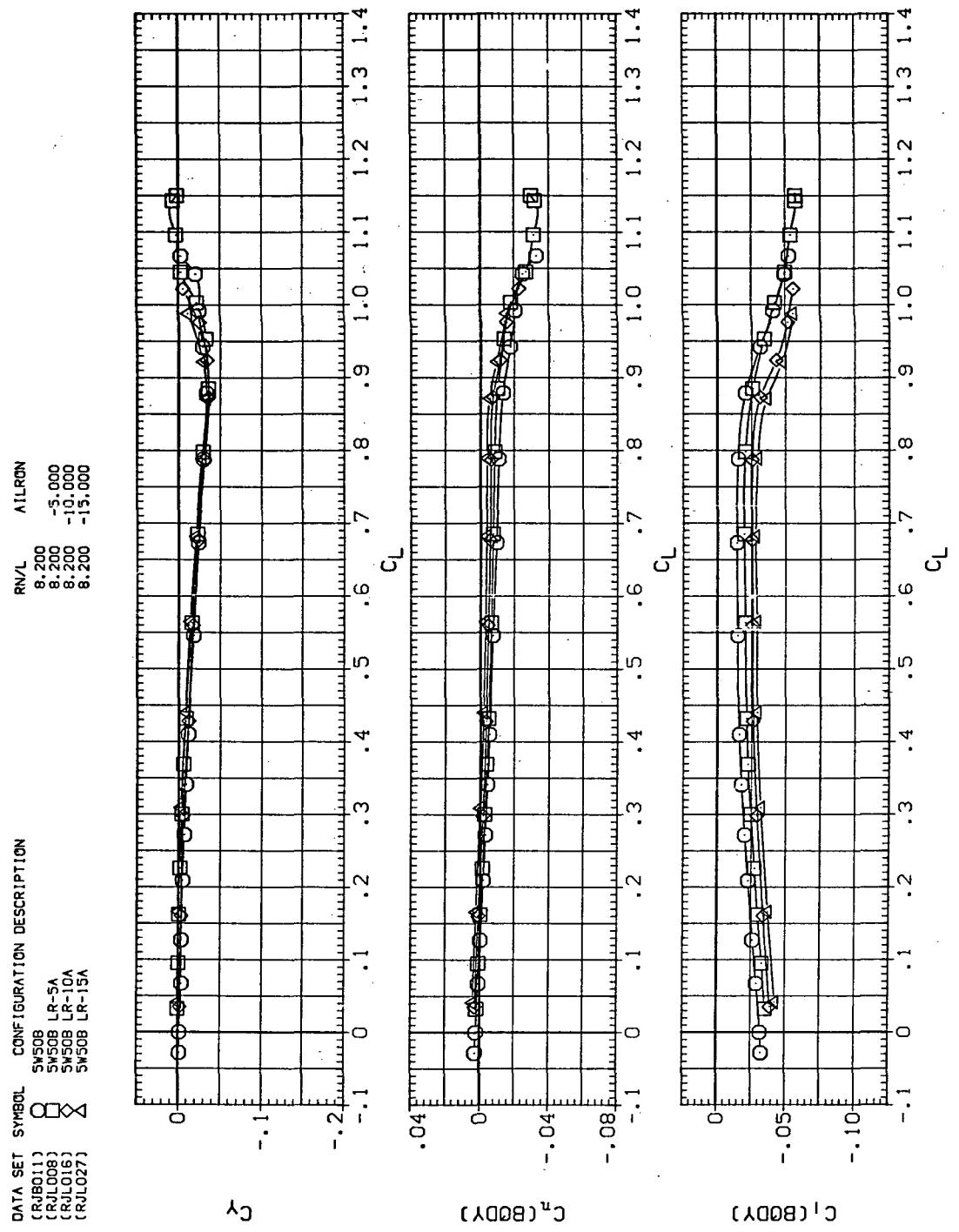
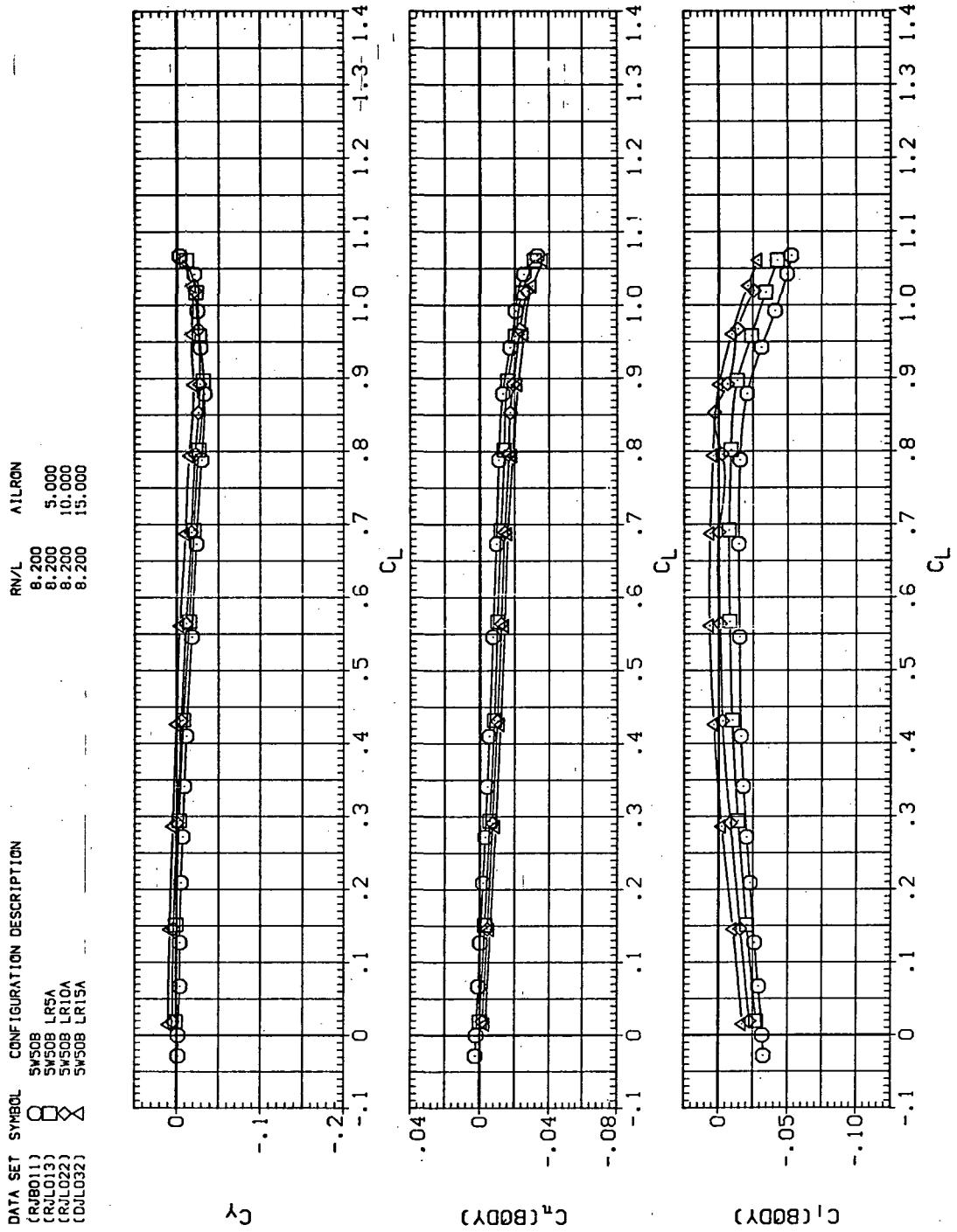
(d)  $L/D$  vs  $C_L$ 

Figure 35.—Continued.



(e)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

Figure 35.—Continued.



(f)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (positive  $\Delta\delta_a$ 's).

Figure 35.—Concluded.

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
[CRJ011]	○	SW508
[CDJL032]	□	SW508 LR15A
[CRJL027]	◇	SW508 LR15A

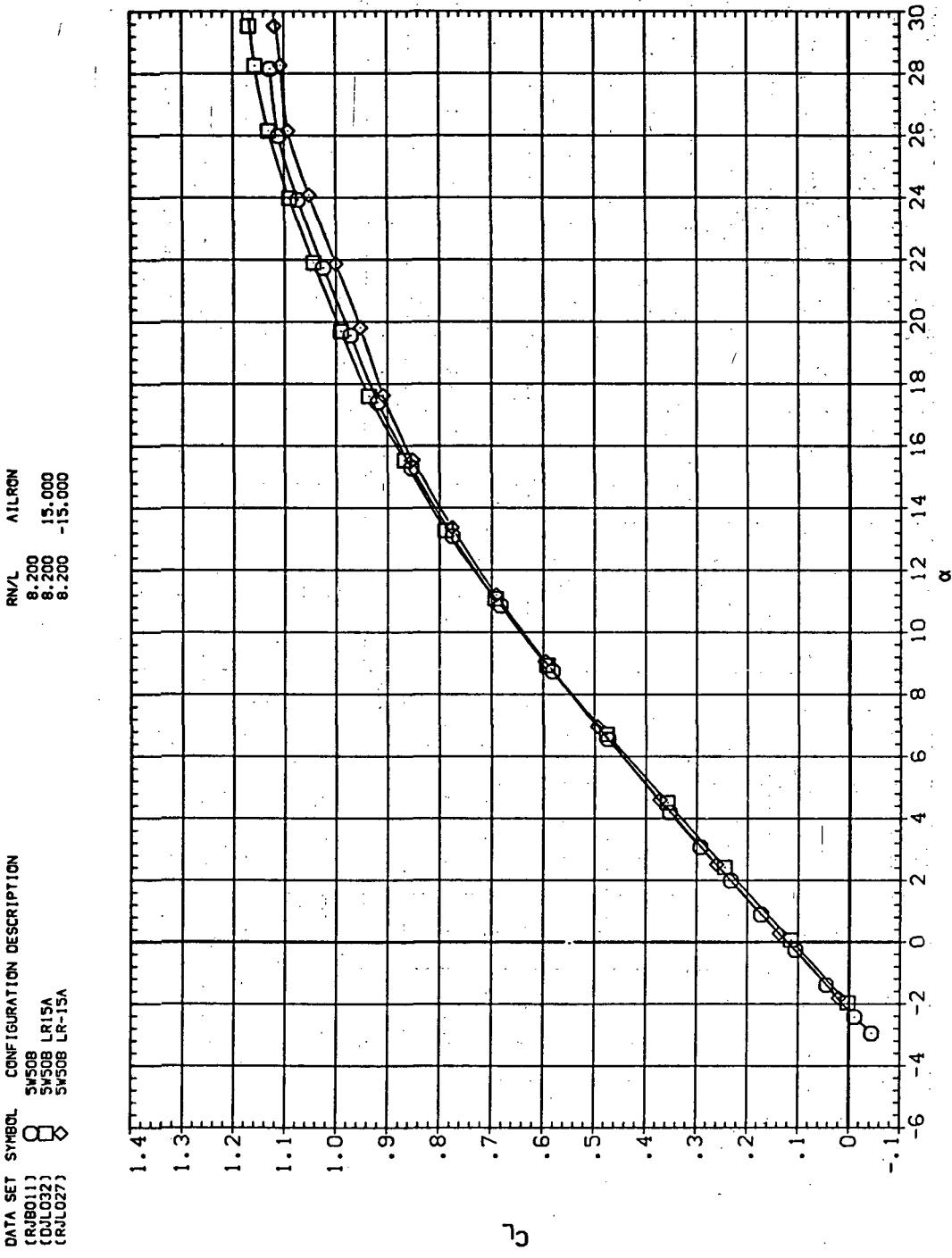
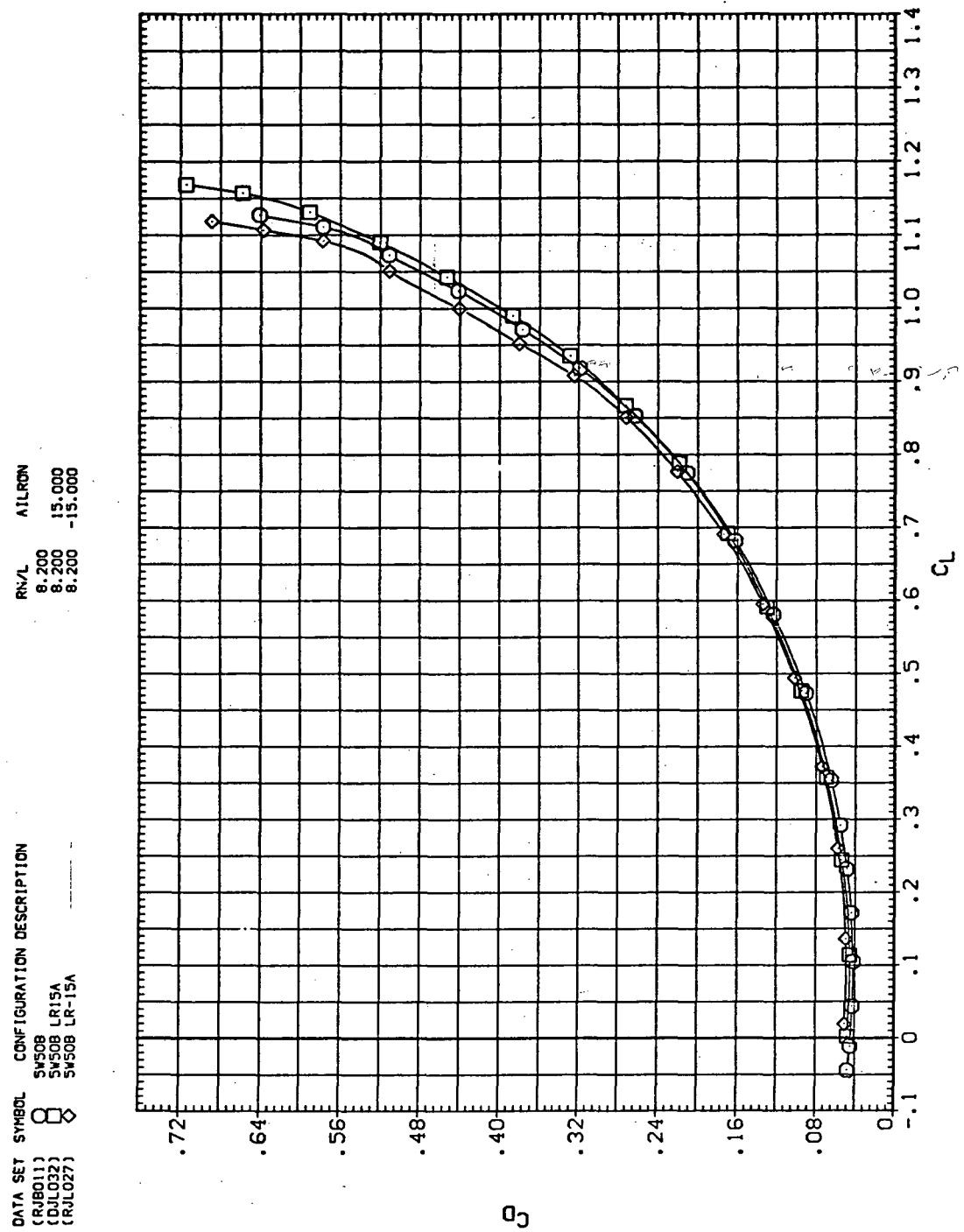
(a)  $C_L$  vs  $\alpha$ 

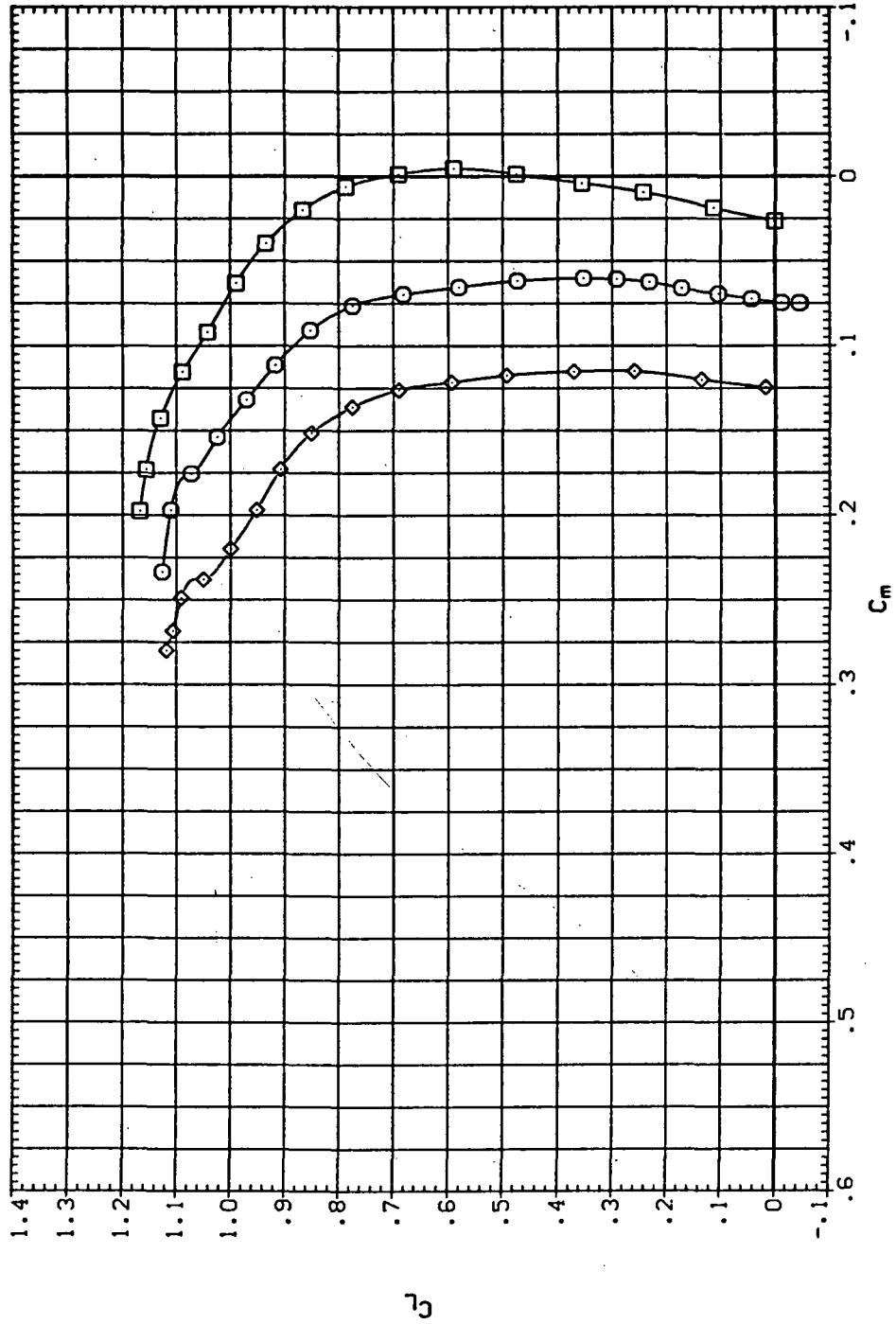
Figure 36.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 50^\circ, M = 1.40$ .



(b)  $C_D$  vs  $C_L$

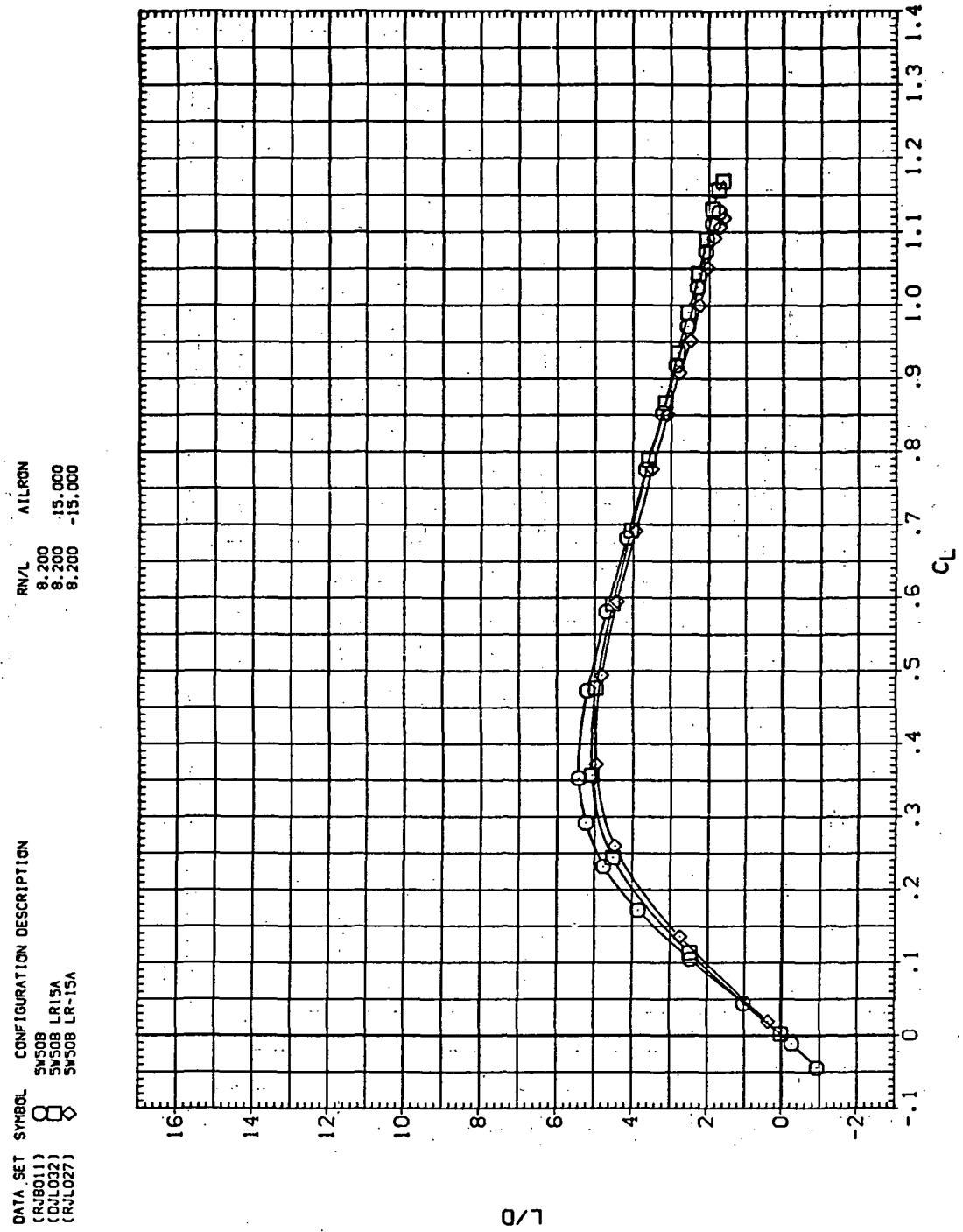
Figure 36.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (RJB011) SW508 SW508 LR15A  
 (DJL032) SW508 SW508 LR-15A  
 (RJL027) SW508 SW508 LR-15A



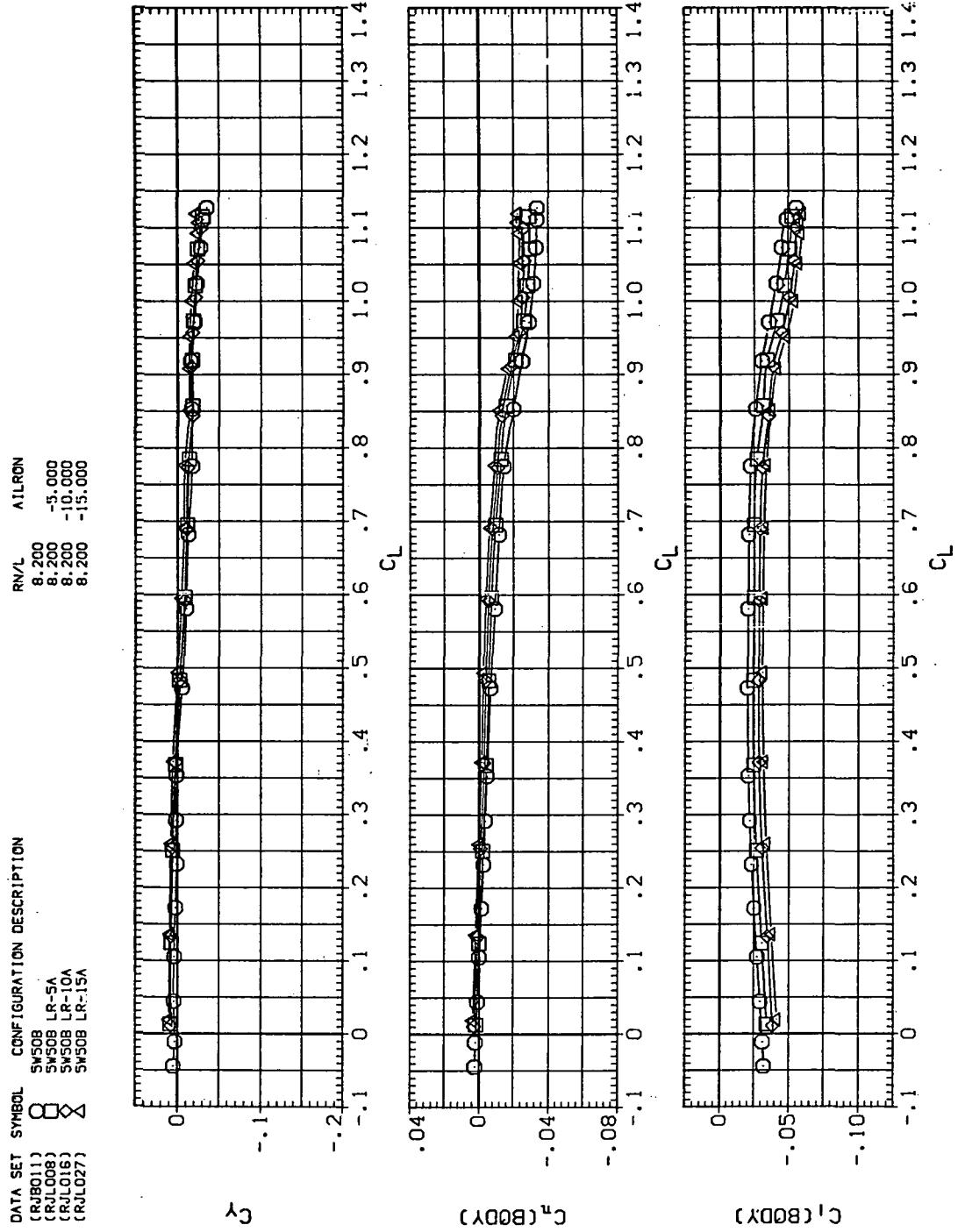
(c)  $C_L$  vs  $C_m$

Figure 36.—Continued.



(d)  $L/D$  vs  $C_L$

Figure 36.—Continued.



(e)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

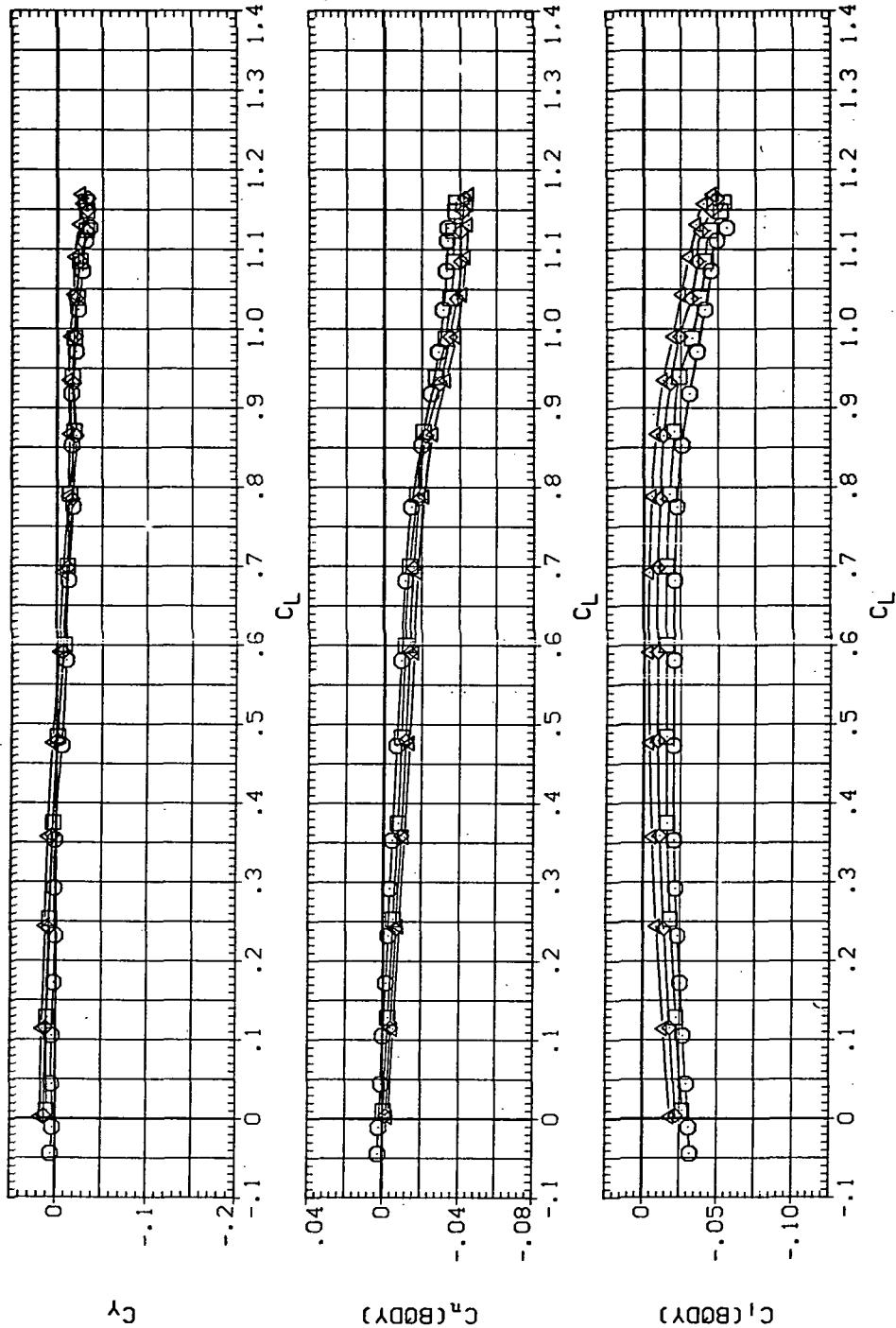
Figure 36.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

RJB011]		SW50B	LR5A
RJB013]		SW50B	LR5A
RJB022]		SW50B	LR10A
DJL032]		SW50B	LR15A

RN/L AILRON

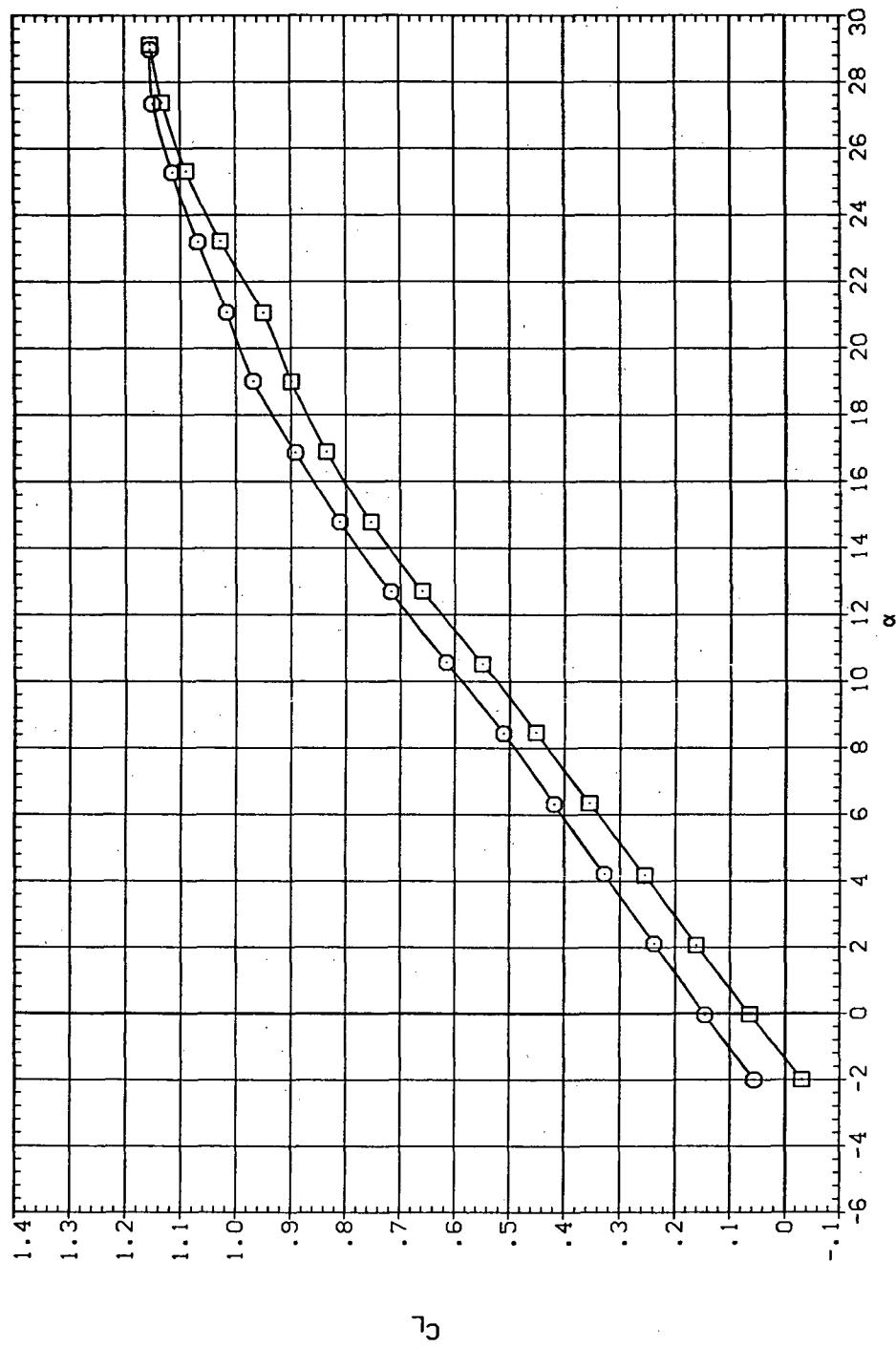
8.200	5.000
8.200	5.000
8.200	10.000
8.200	15.000



(f)  $C_Y$ ,  $C_n$ , and  $C_I$  vs  $C_L$  (positive  $\Delta\delta_d$ 's).

Figure 36.—Concluded.

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(DJL033)	$\square$	SW55B LRUSA
(RJL026)	$\circ$	SW55B LR-15A



(a)  $C_L$  vs  $\alpha$

Figure 37.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 55^\circ, M = 0.60.$

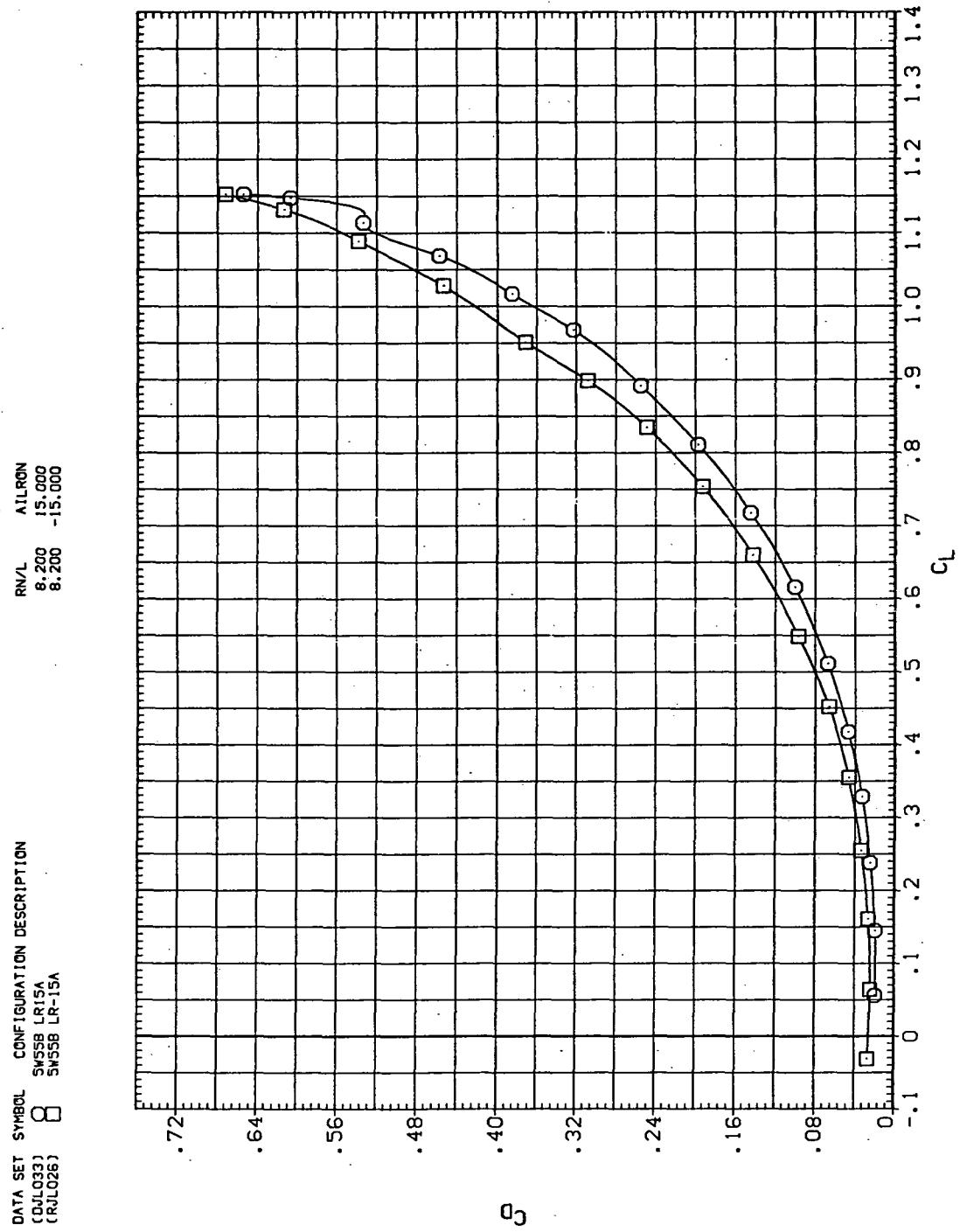
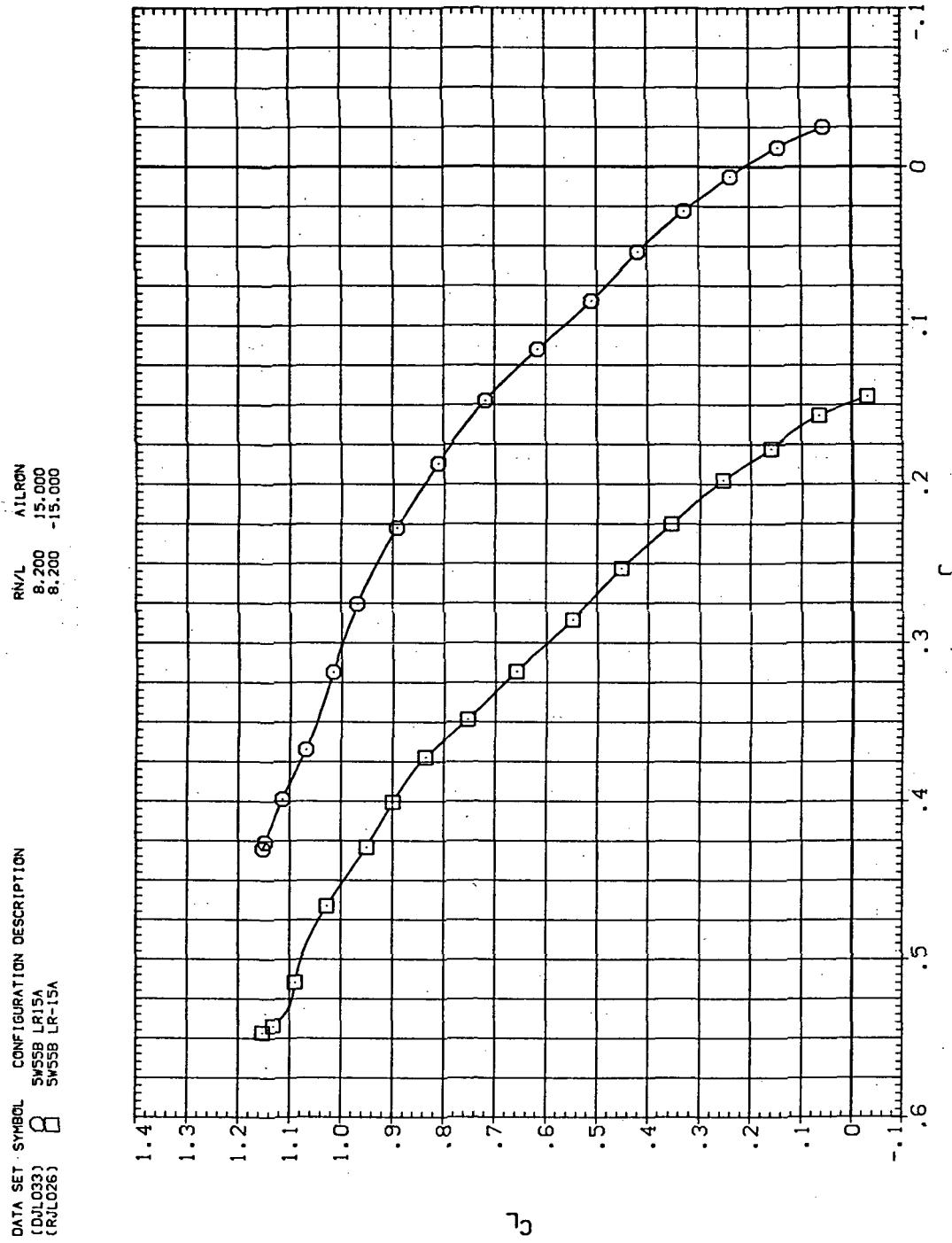
(b)  $C_D$  vs  $C_L$ 

Figure 37.— Continued.

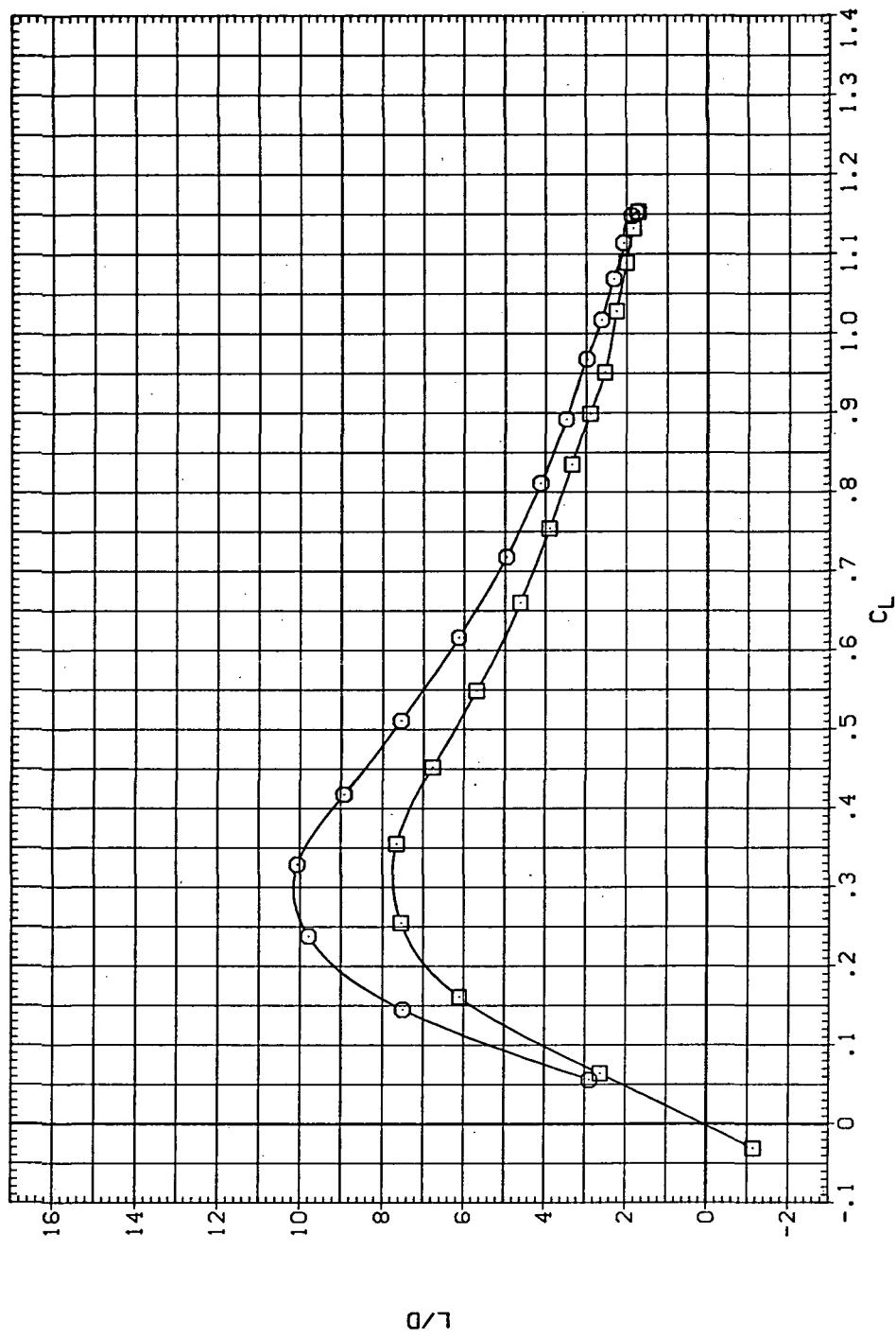


(c)  $C_L$  vs  $C_m$

Figure 37.—Continued.

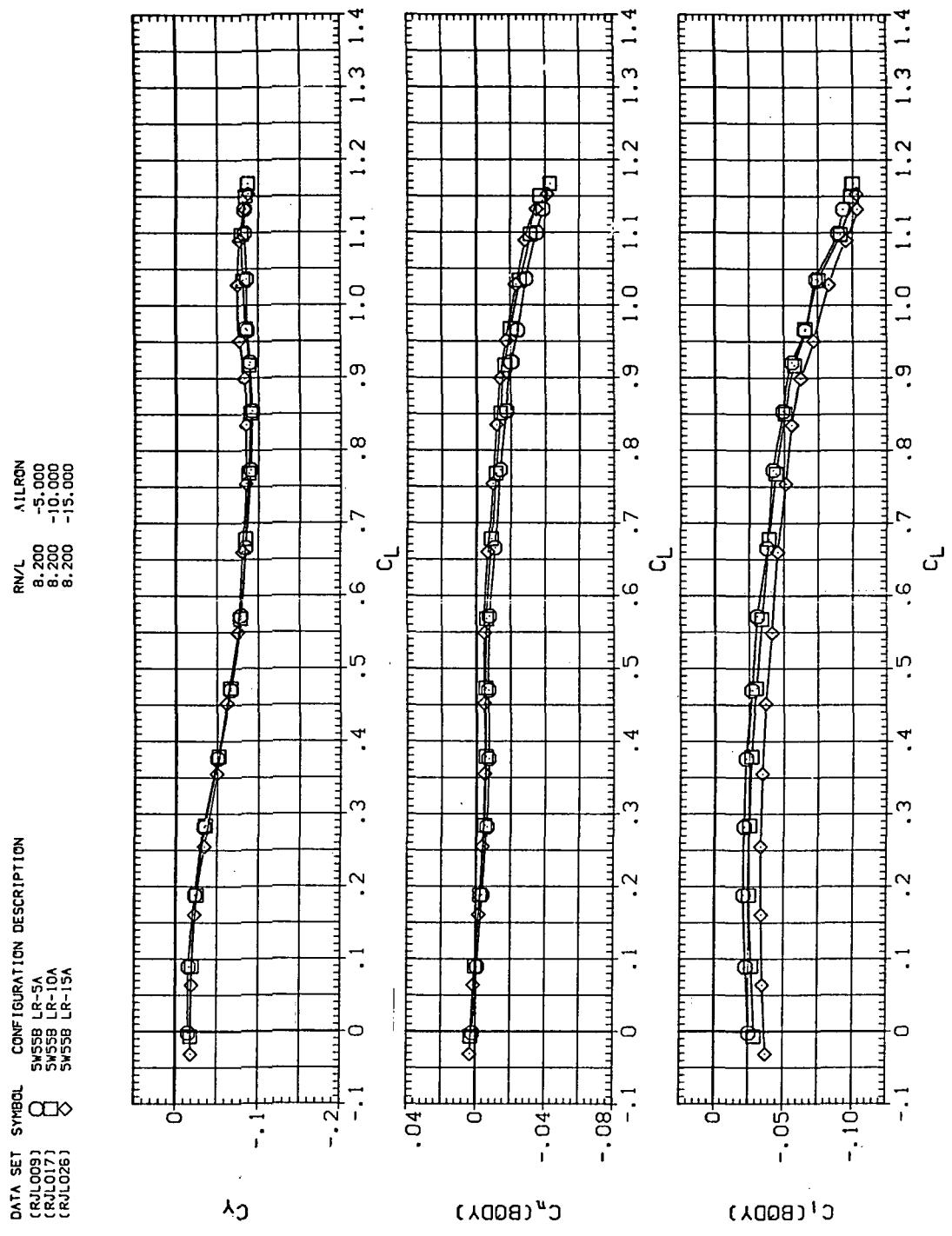
DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (DUJL033) 8 SW55B LR15A  
 (RJL026) □ SW55B LR-15A

RN/L 8.200 15.000  
 AILRON 8.200 -15.000



(d)  $L/D$  vs  $C_L$

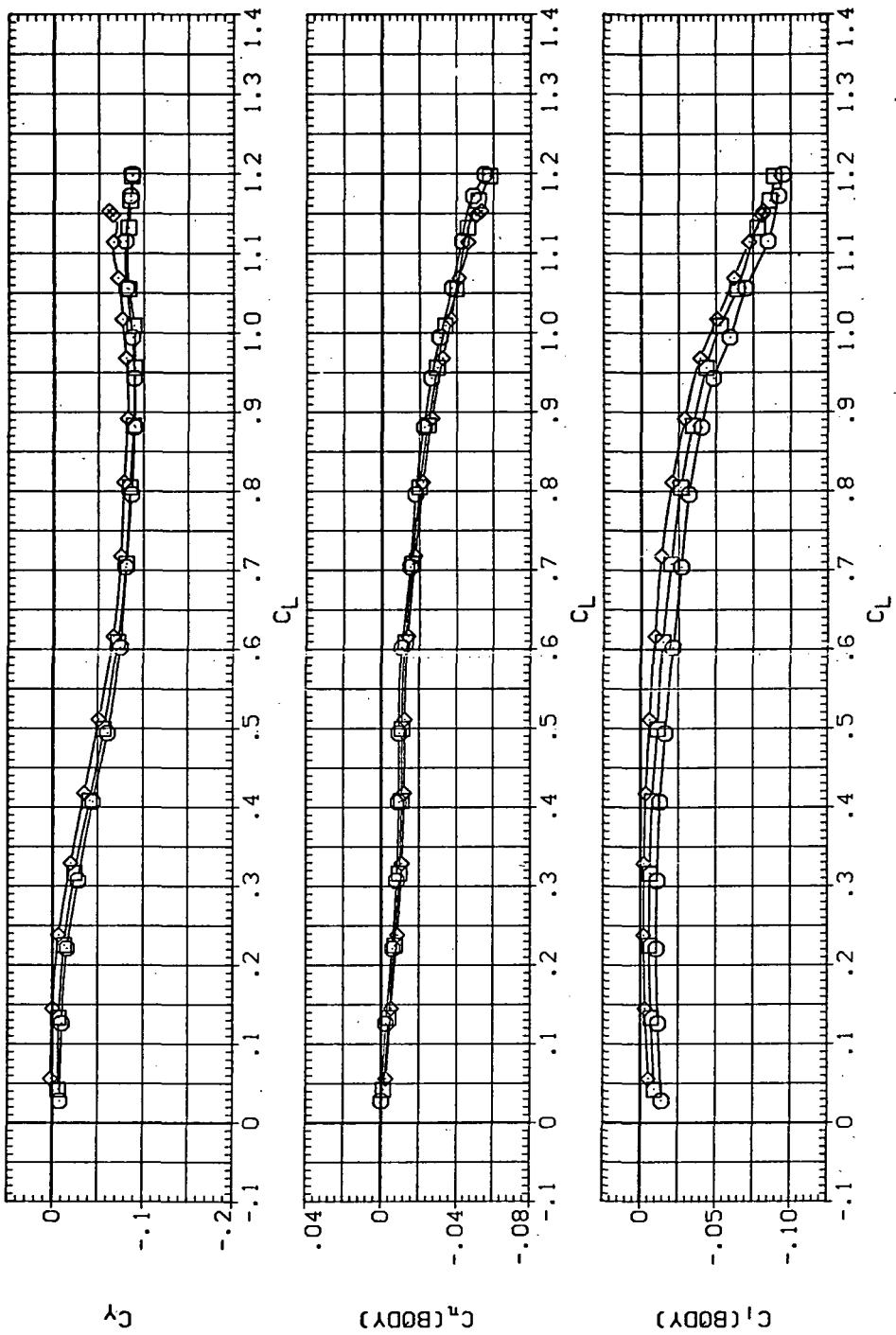
Figure 37.—Continued.



(e)  $C_Y$ ,  $C_n$ , and  $C_L$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

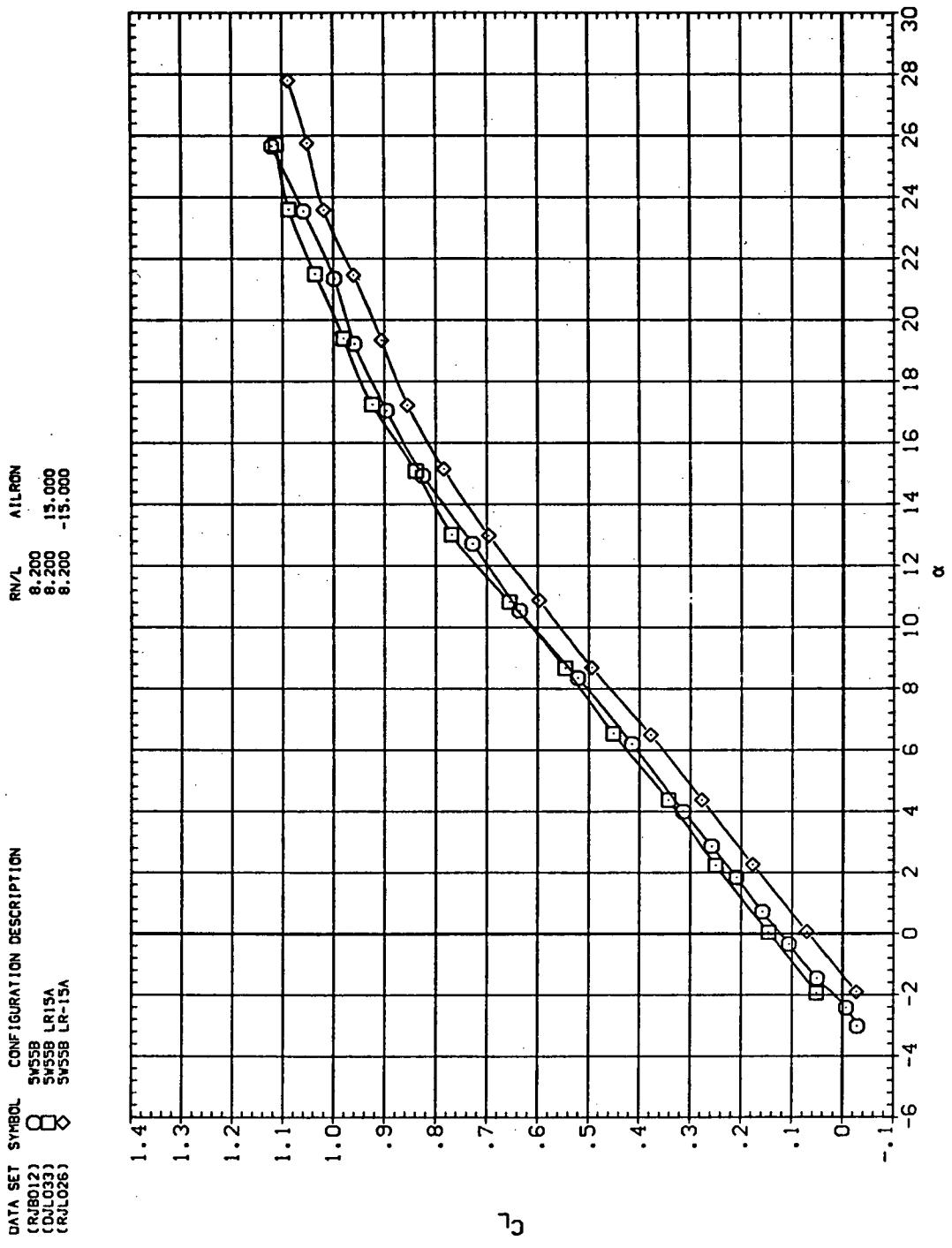
Figure 37.—Continued.

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(RUL012)	$\square$	SW55B LR5A
(RUL023)	$\diamond$	SW55B LR10A
(DUL033)	$\circ$	SW55B LR15A



(f)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (positive  $\Delta\delta_a$ 's).

Figure 37.— Concluded.



(a)  $C_L$  vs  $\alpha$

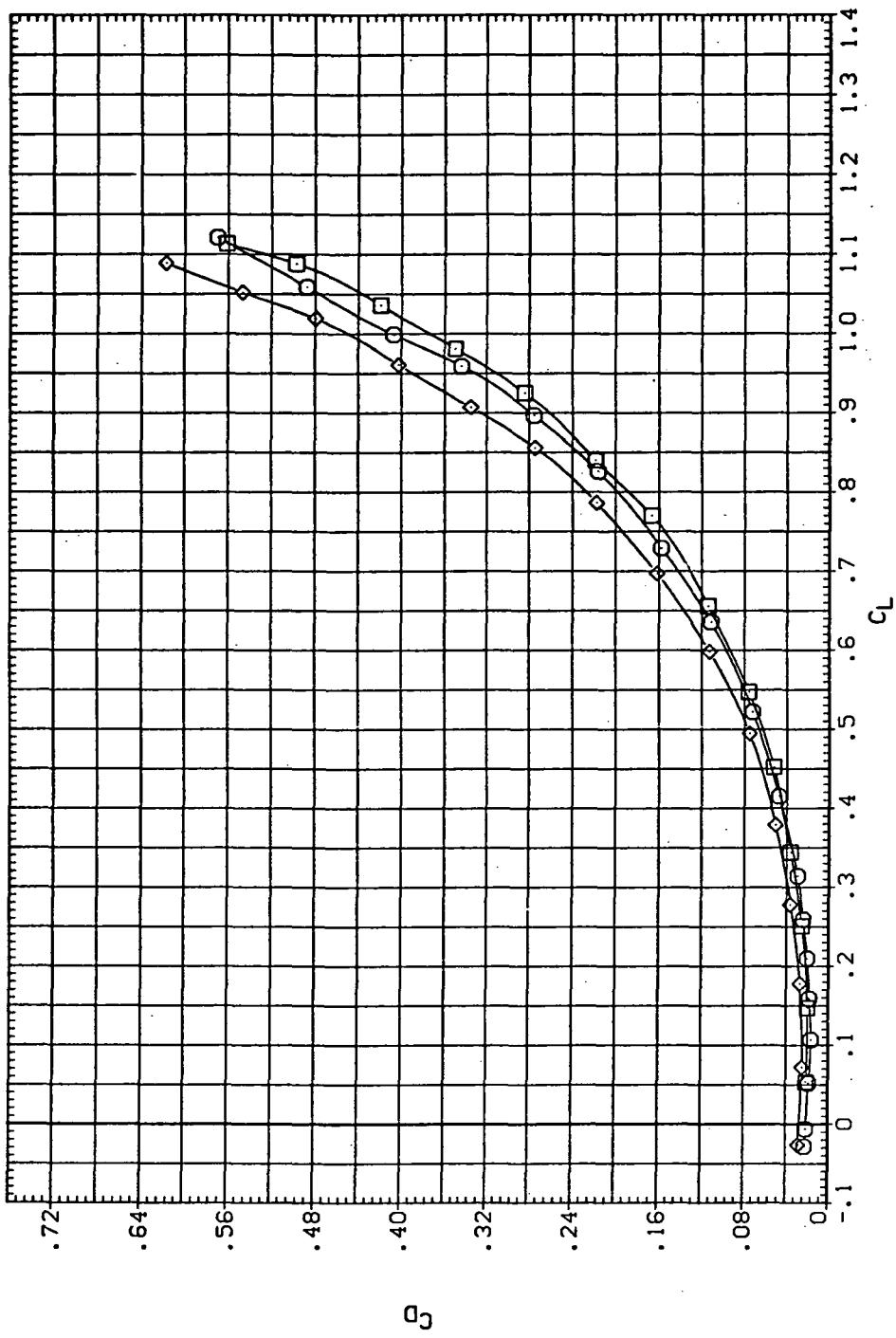
Figure 38.—Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 55^\circ, M = 0.90.$

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RIB012)	○	SW55B
(CDL033)	□	SW55B LR15A
(CRL026)	◇	SW55B LR-15A

RN/L AILRON

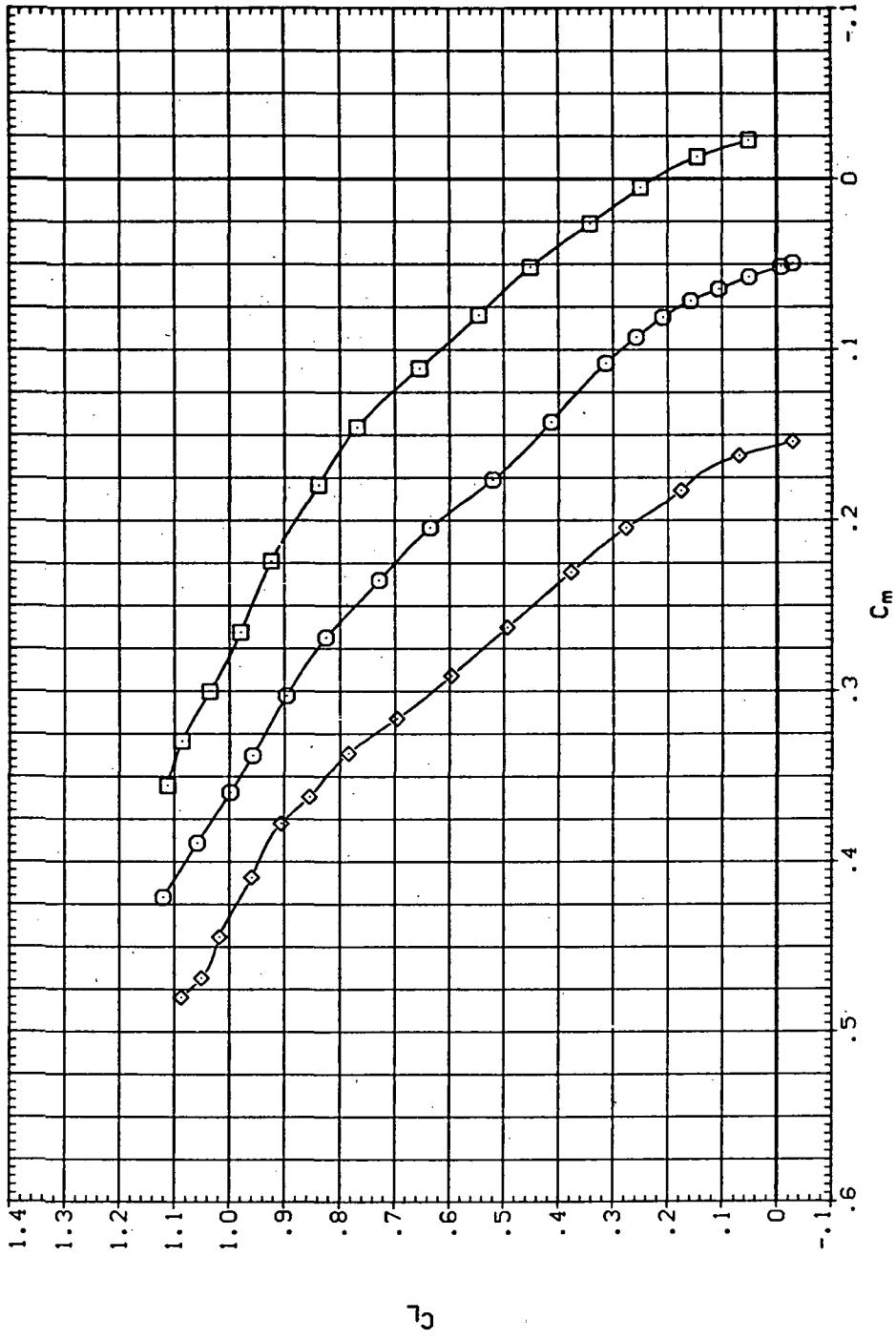
8.200	15.000
8.200	-15.000
8.200	



(b)  $C_D$  vs  $C_L$

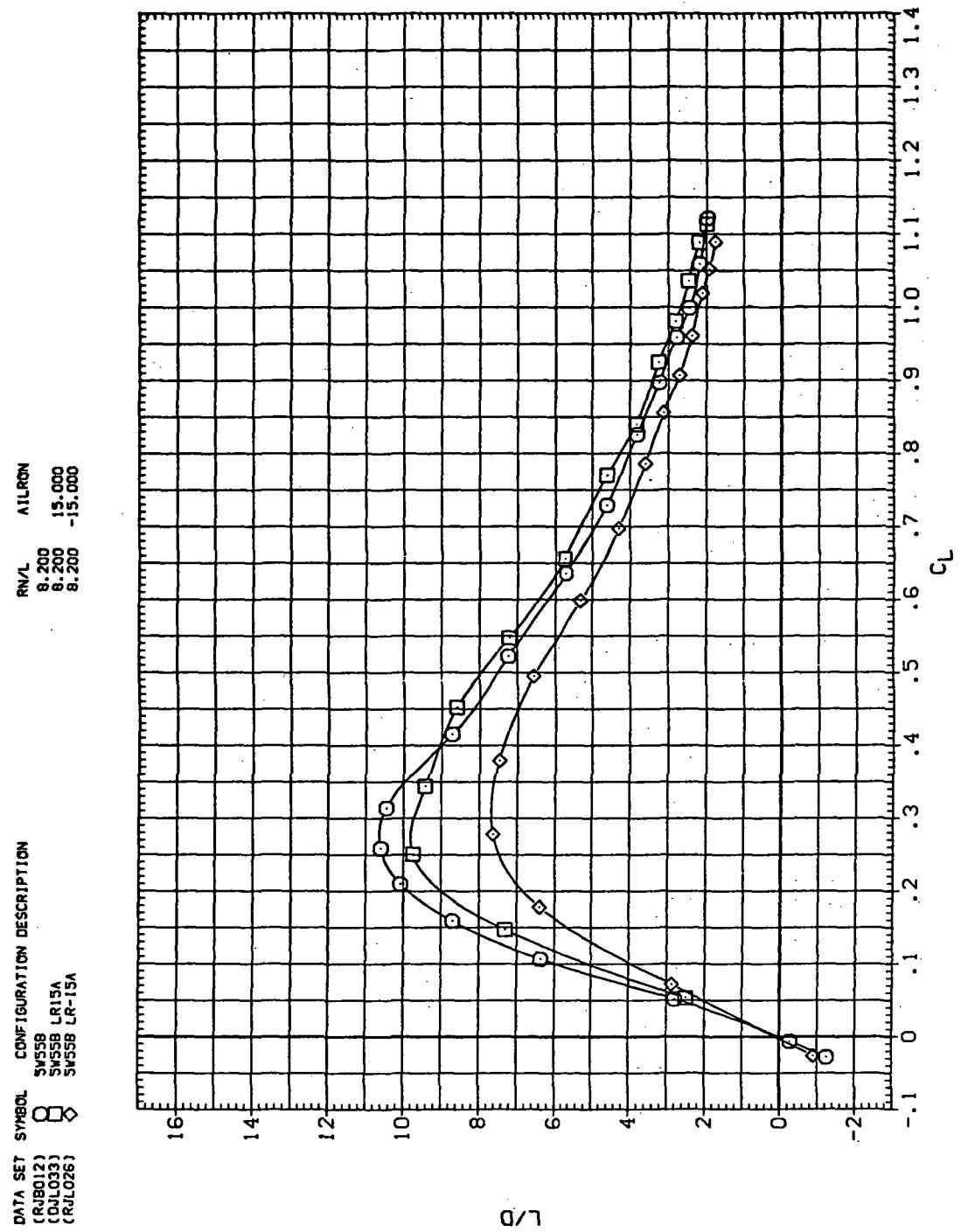
Figure 38.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (RJB012) SW55B LR15A  
 (DJ033) SW55B LR15A  
 (RJL026) SW55B LR15A



(c)  $C_L$  vs  $C_m$

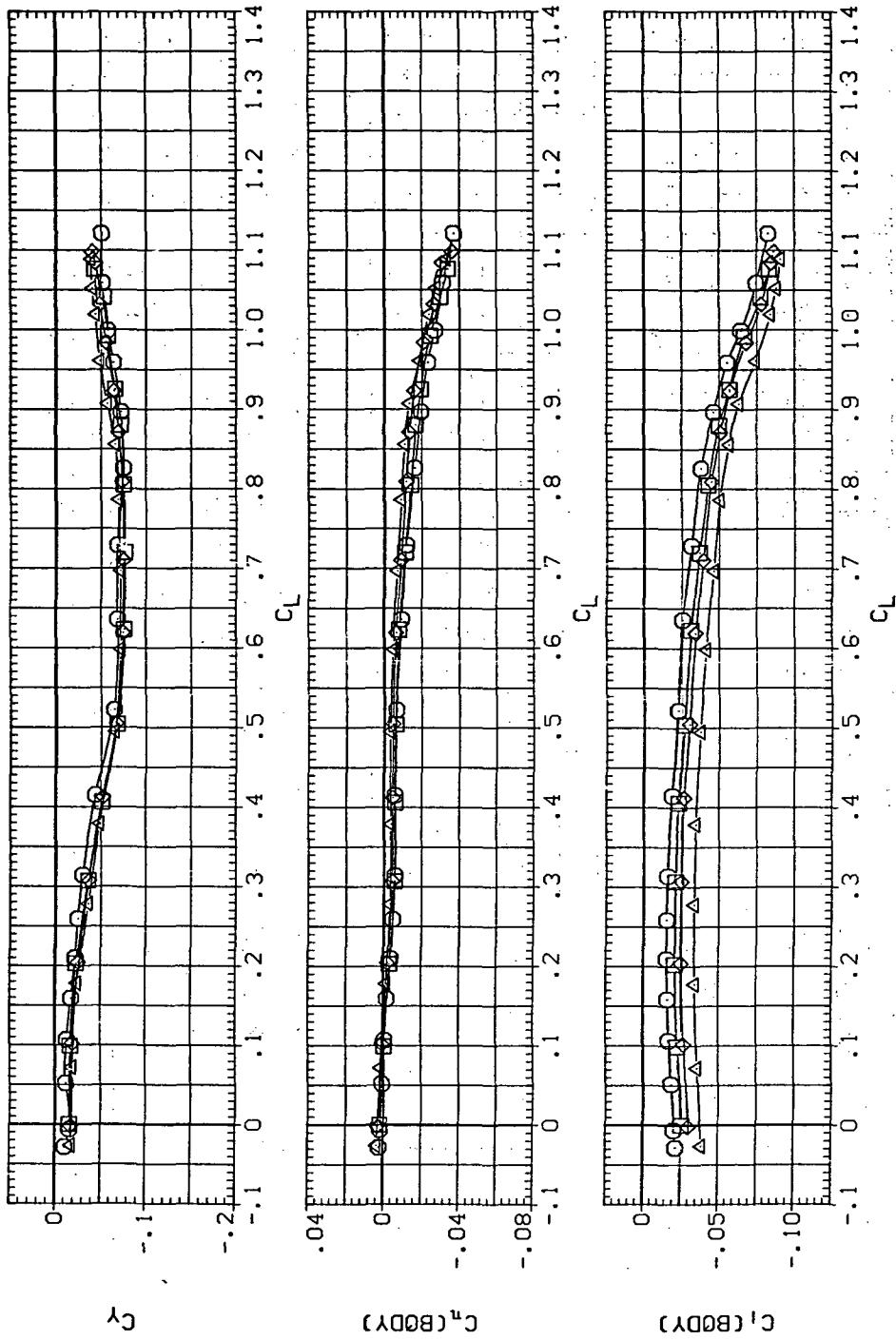
Figure 38.—Continued.



(d)  $L/D$  vs  $C_L$

Figure 38.—Continued.

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	R/N/L	AIRRON
RJBD12	○	SW55B	8.200	
RJLC09	□	SW55B LR-5A	8.200	-5.000
RJLC07	◇	SW55B LR-10A	8.200	-10.000
RJLC06	△	SW55B LR-15A	8.200	-15.000



(e)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

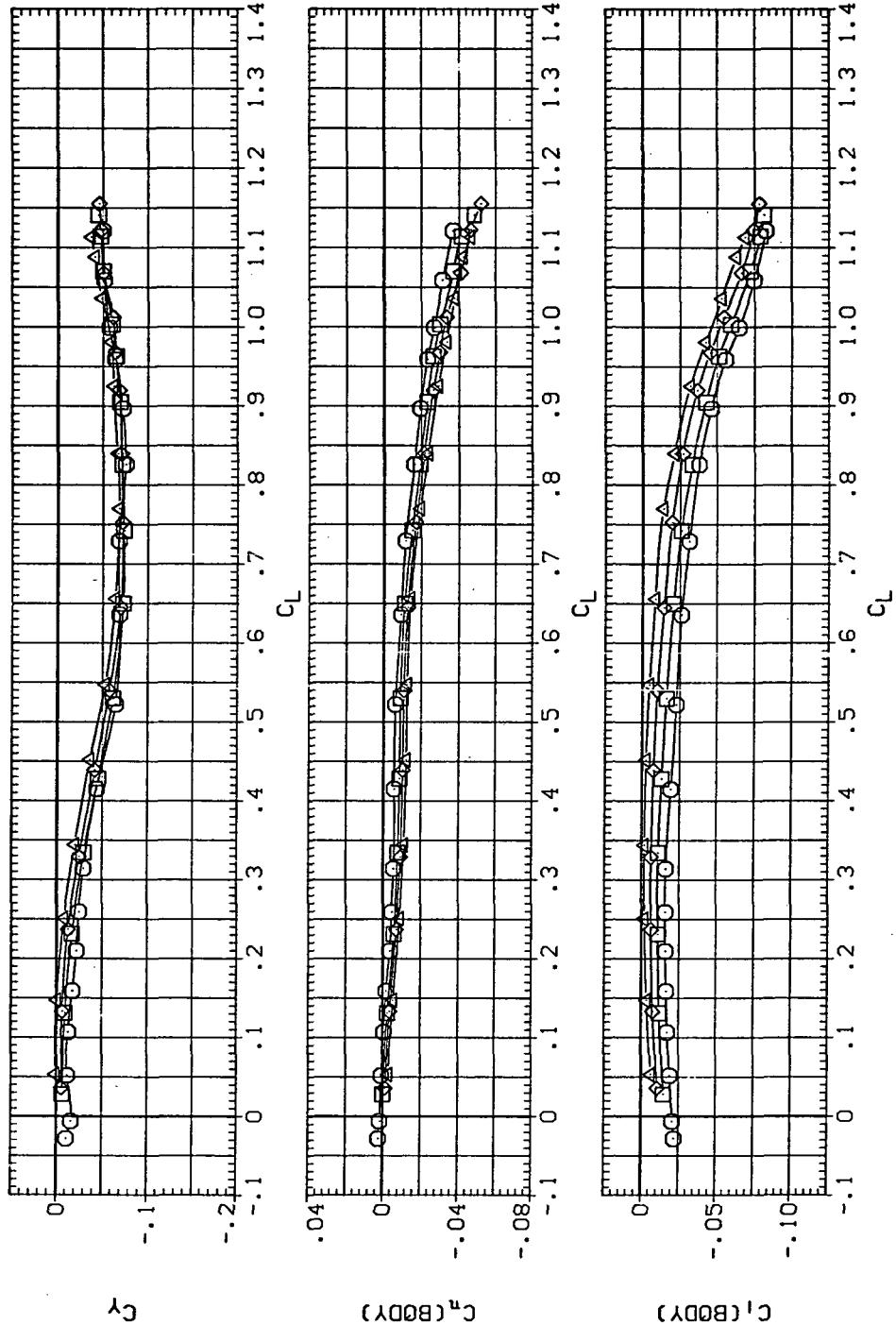
Figure 38.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RJ012)		SW55B	RN/L	AIRFRN
(RJ012)		SW55B	8.200	5.000
(RJ023)		LR50A	8.200	10.000
(DJ033)		SW55B	8.200	15.000
		LR15A		

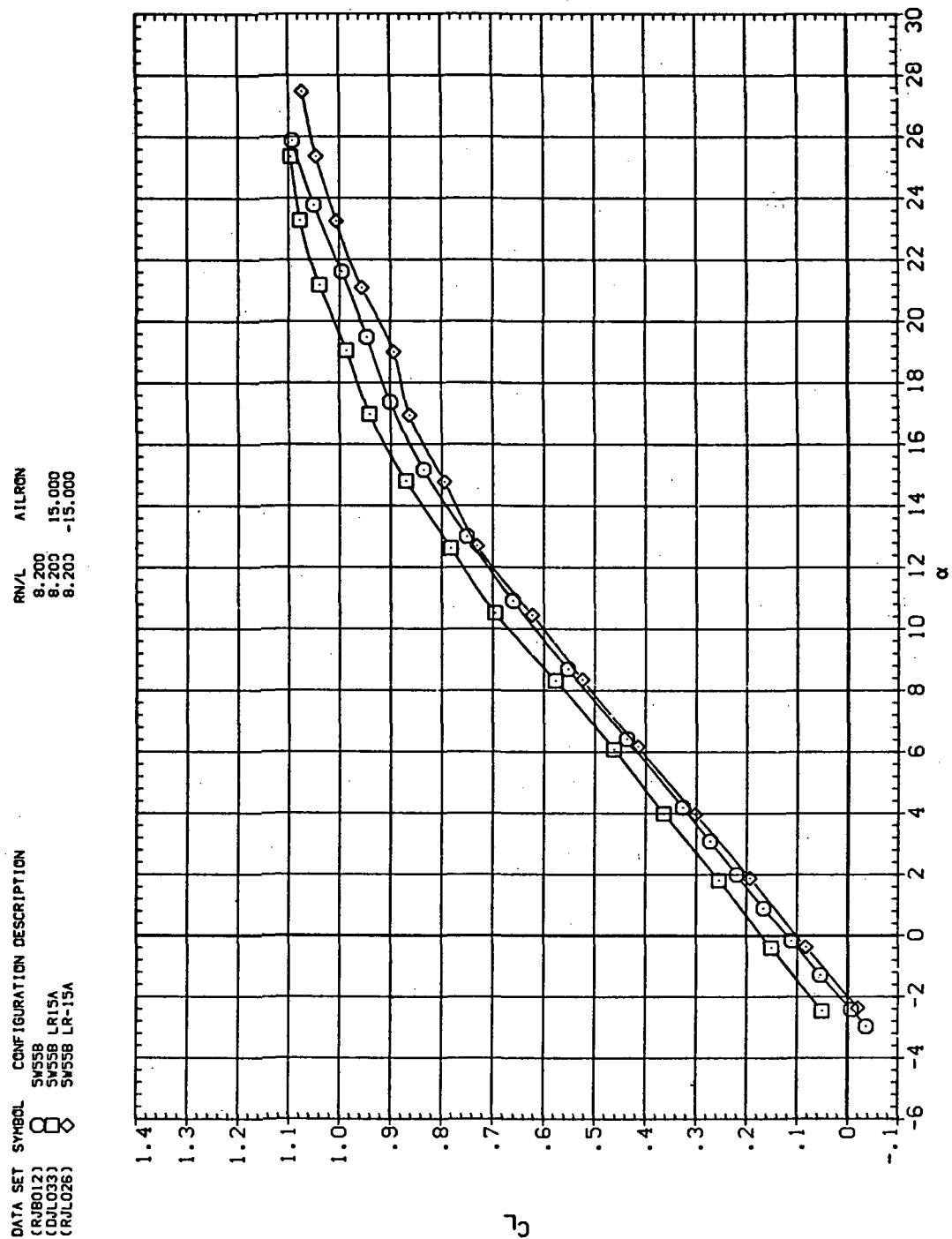
RN/L AIRFRN

8.200	5.000
8.200	10.000
8.200	15.000



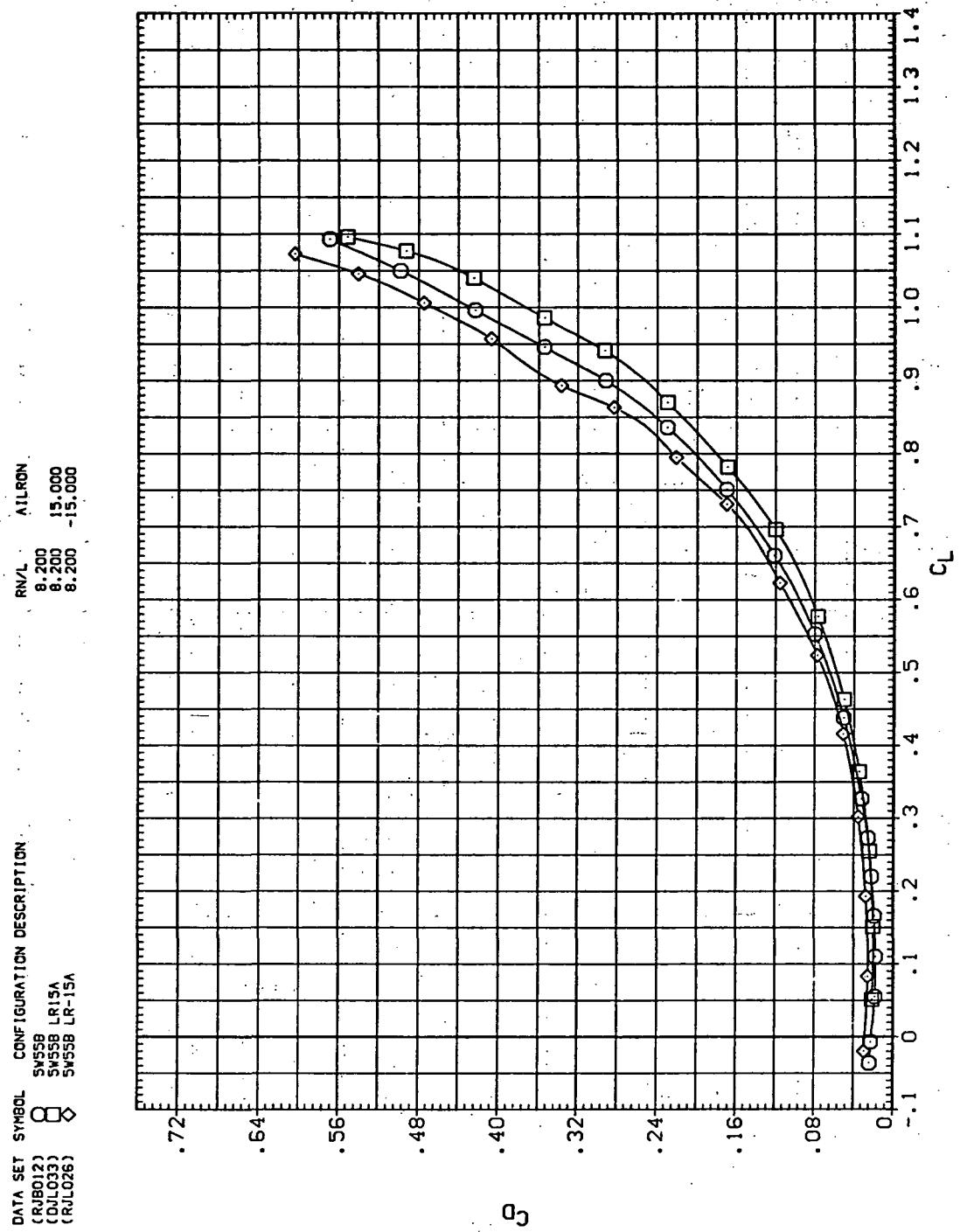
(f)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (positive  $\Delta\delta_a$ 's).

Figure 38.—Concluded.



(a)  $C_L$  vs  $\alpha$

Figure 39.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 55^\circ$ ,  $M = 0.90$ .



(b)  $C_D$  vs  $C_L$

Figure 39.—Continued.

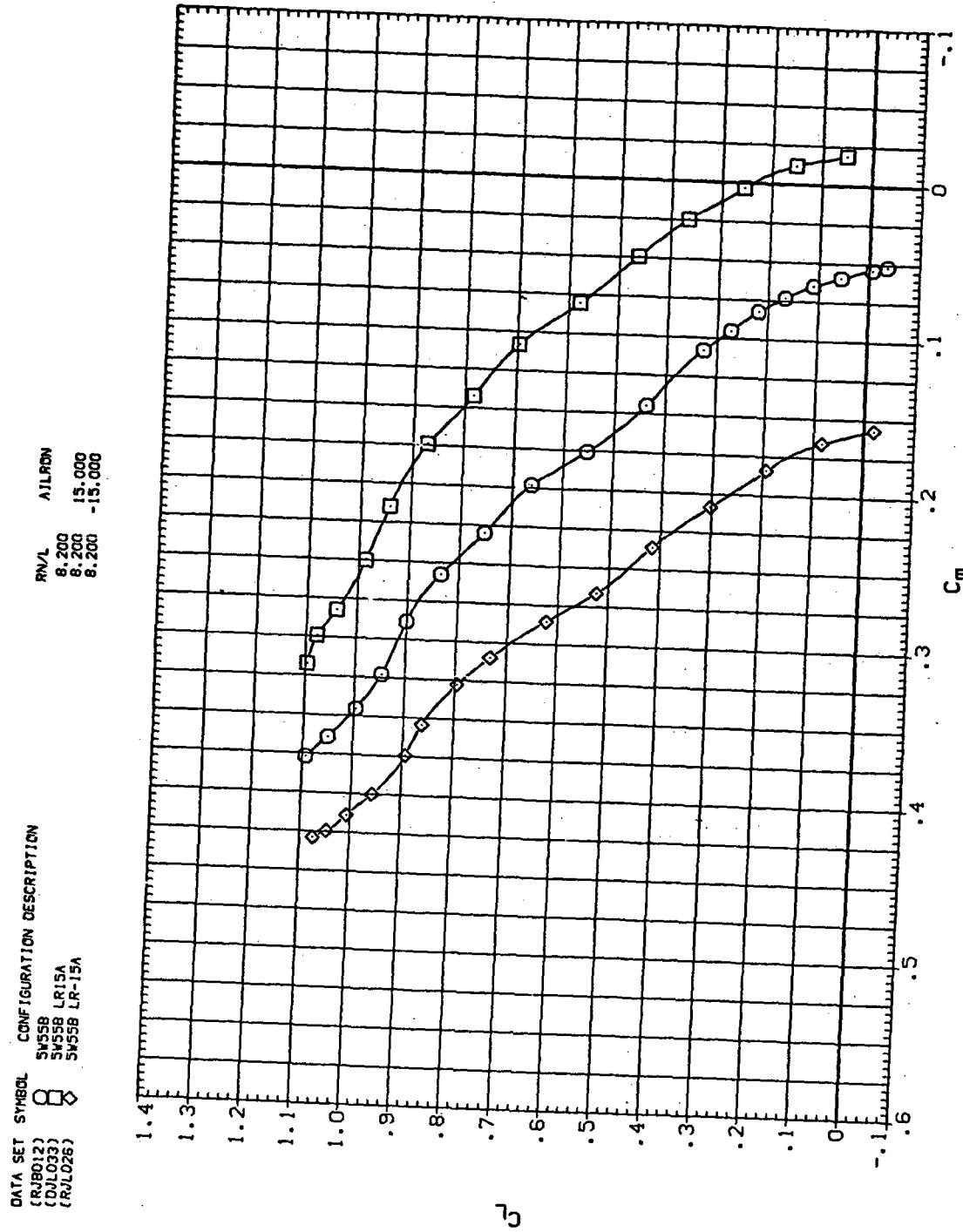
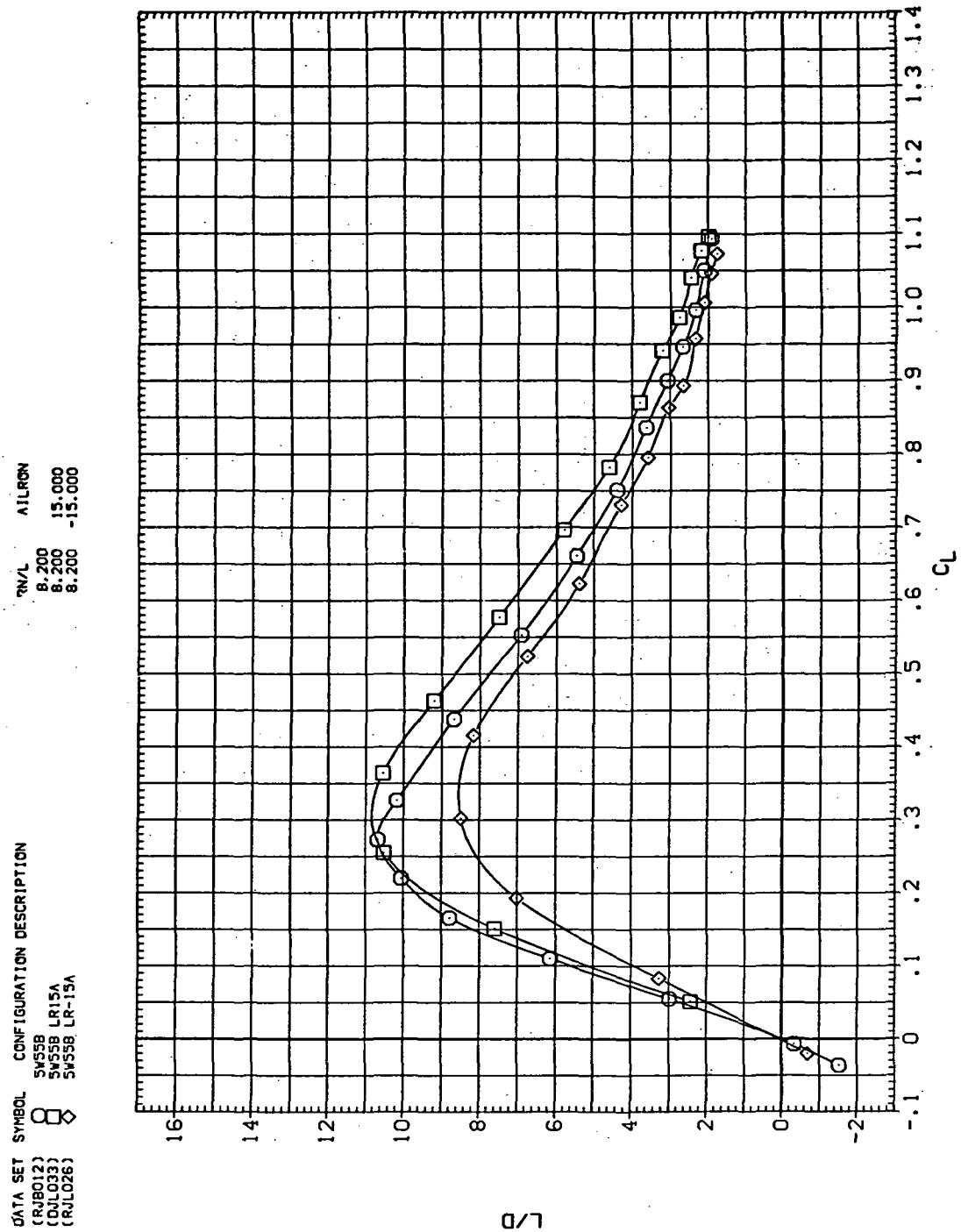
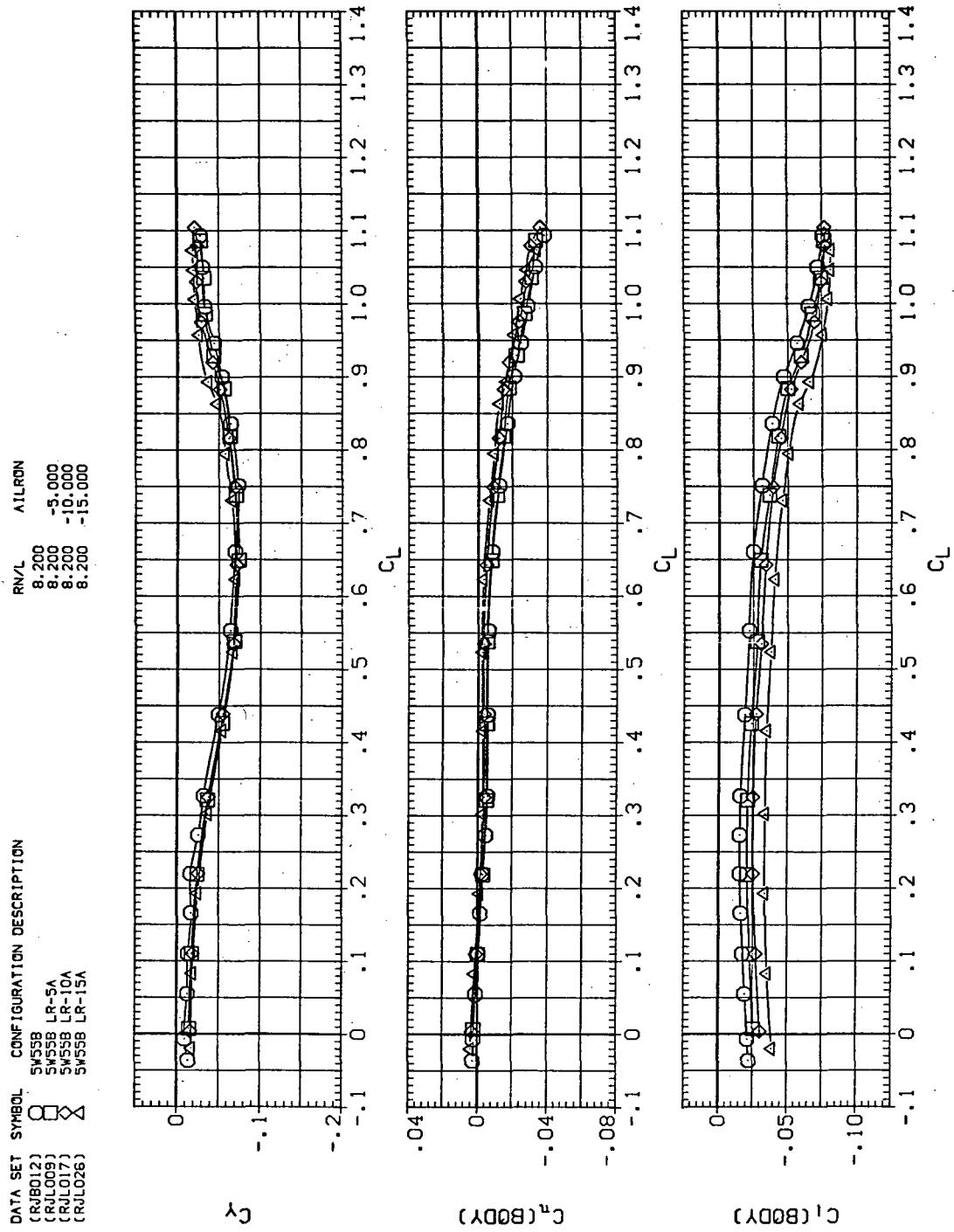


Figure 39.—Continued.



(d)  $L/D$  vs  $C_L$

Figure 39.—Continued.



(e)  $C_Y$ ,  $C_n$ , and  $C_i$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

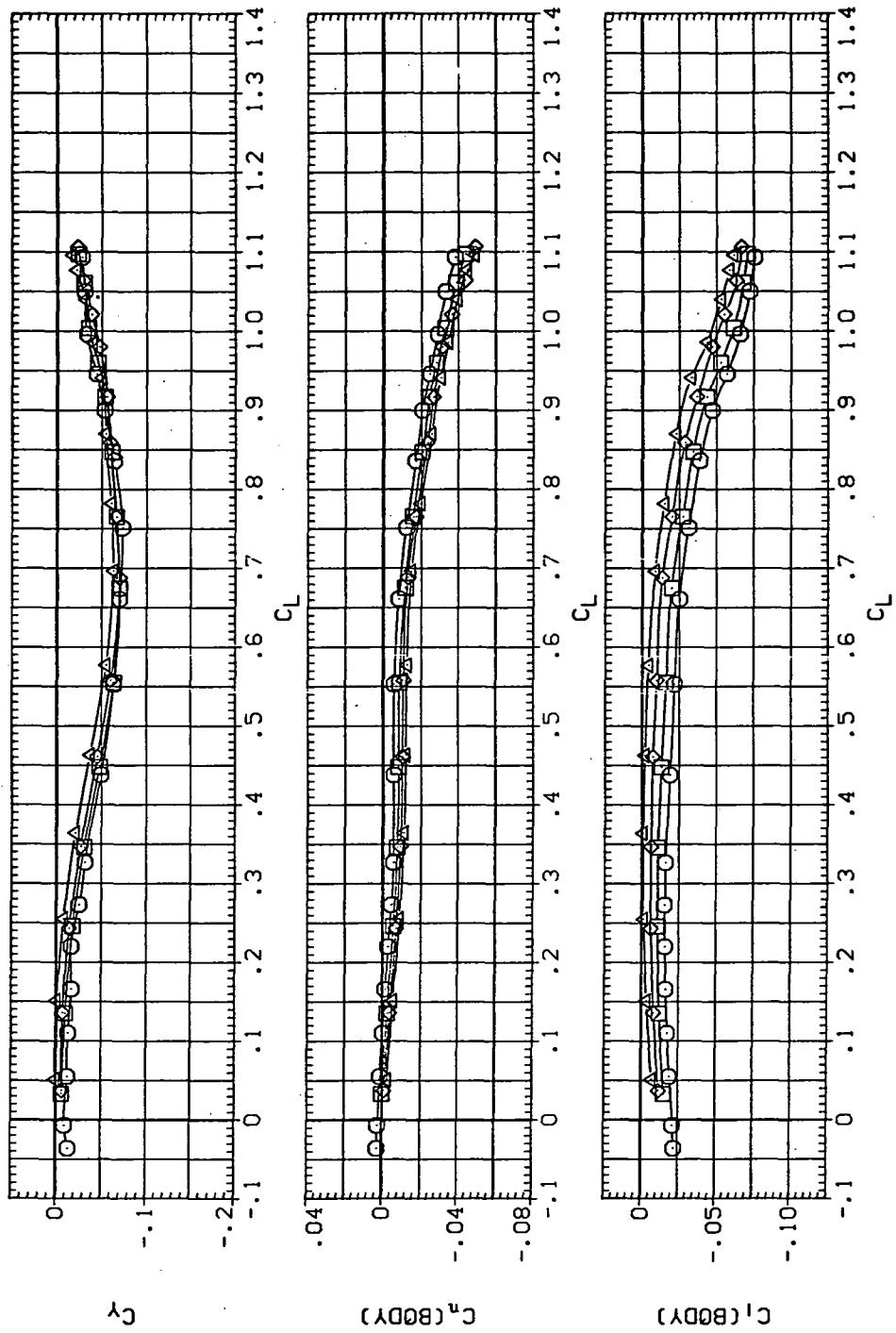
Figure 39.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RB012)	O	51558
(RL012)	□	51558 LSA
(RL033)	X	51558 LRDA
(DL033)	×	54558 LRSA

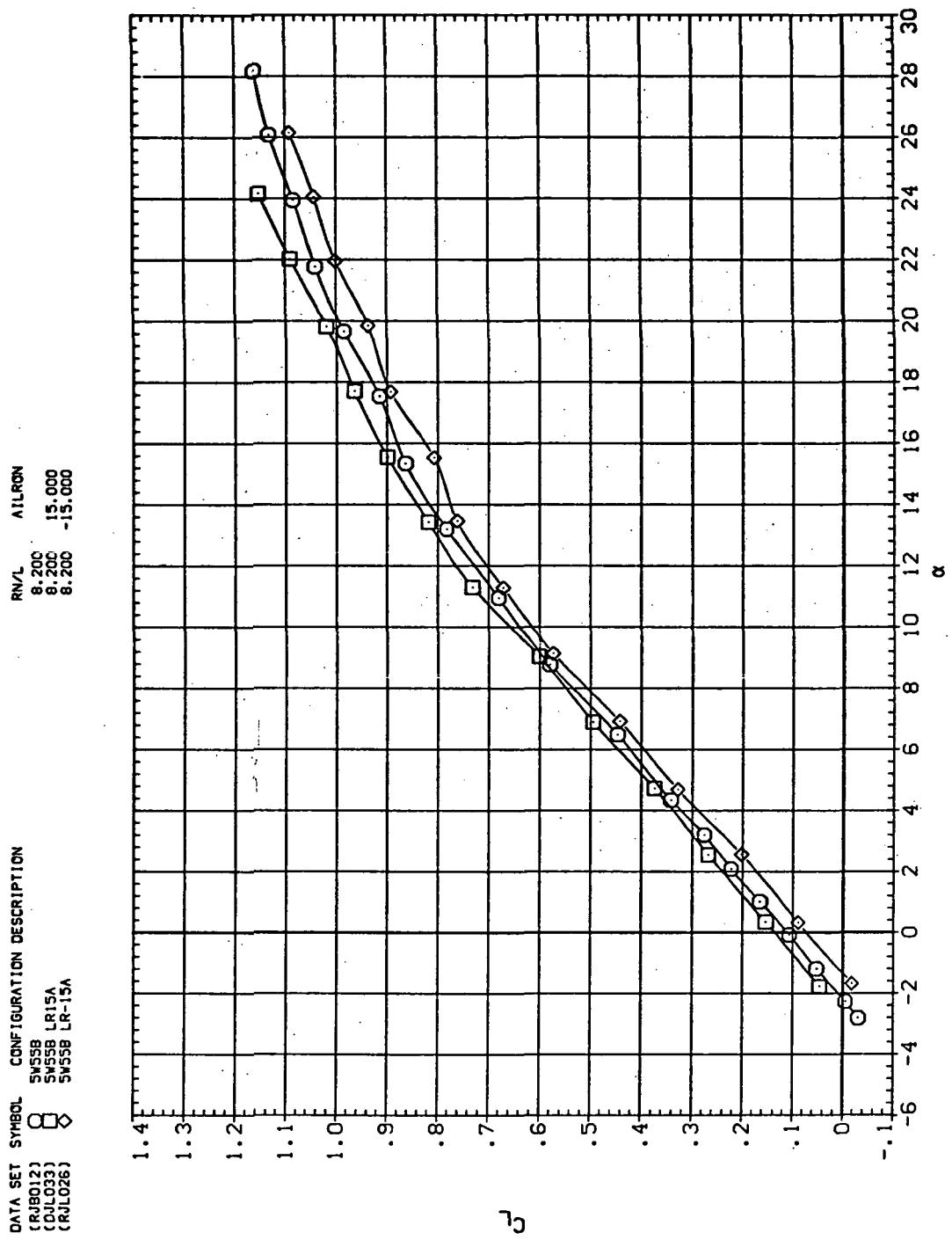
RNL AIRON

8.200	5.000
8.200	10.000
8.200	15.000



(f)  $C_Y$ ,  $C_n$ , and  $C_I$  vs  $C_L$  (positive  $\Delta\delta_a$ 's).

Figure 39.—Concluded.

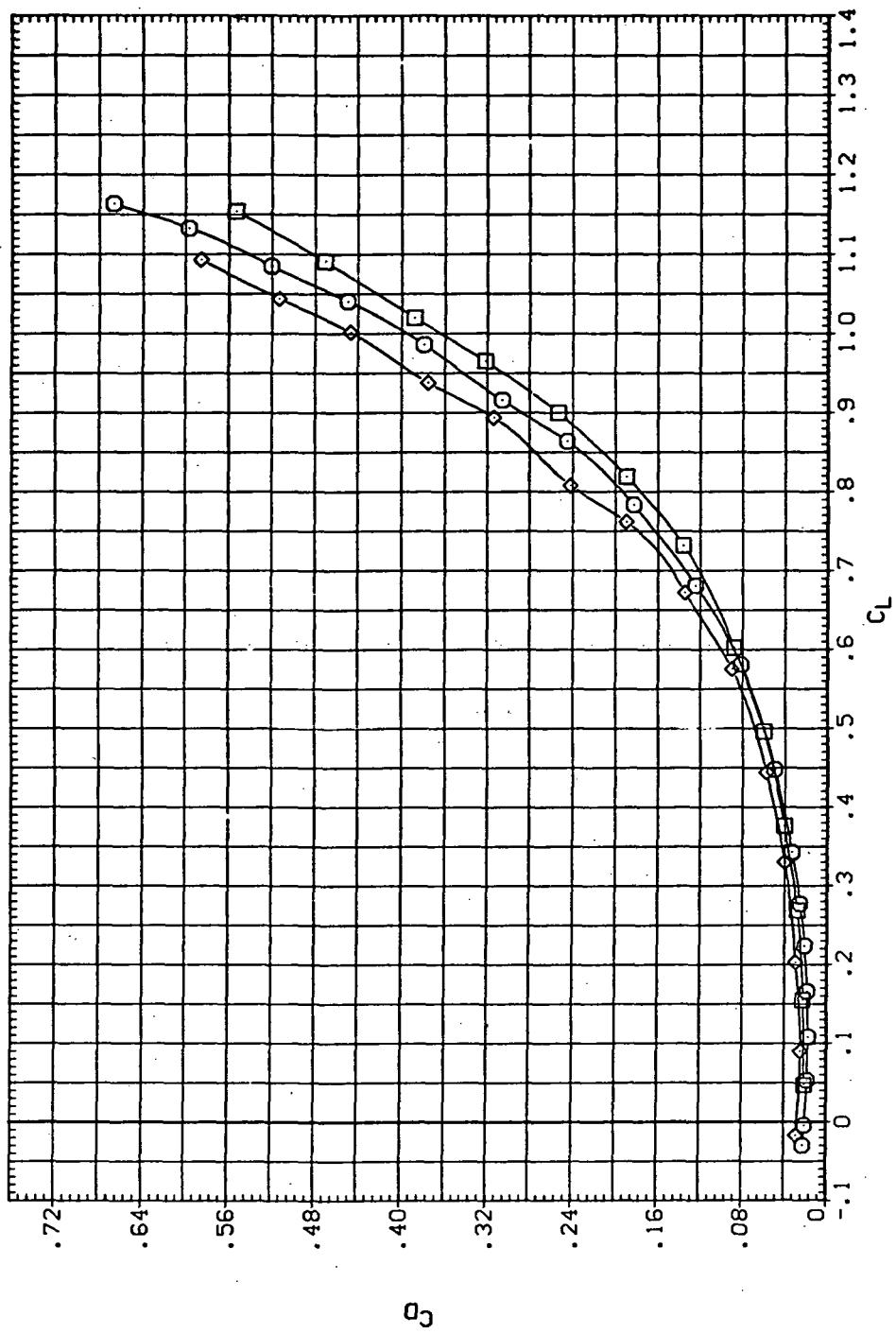


(a)  $C_L$  vs  $\alpha$

Figure 40.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 55^\circ, M = 0.95$ .

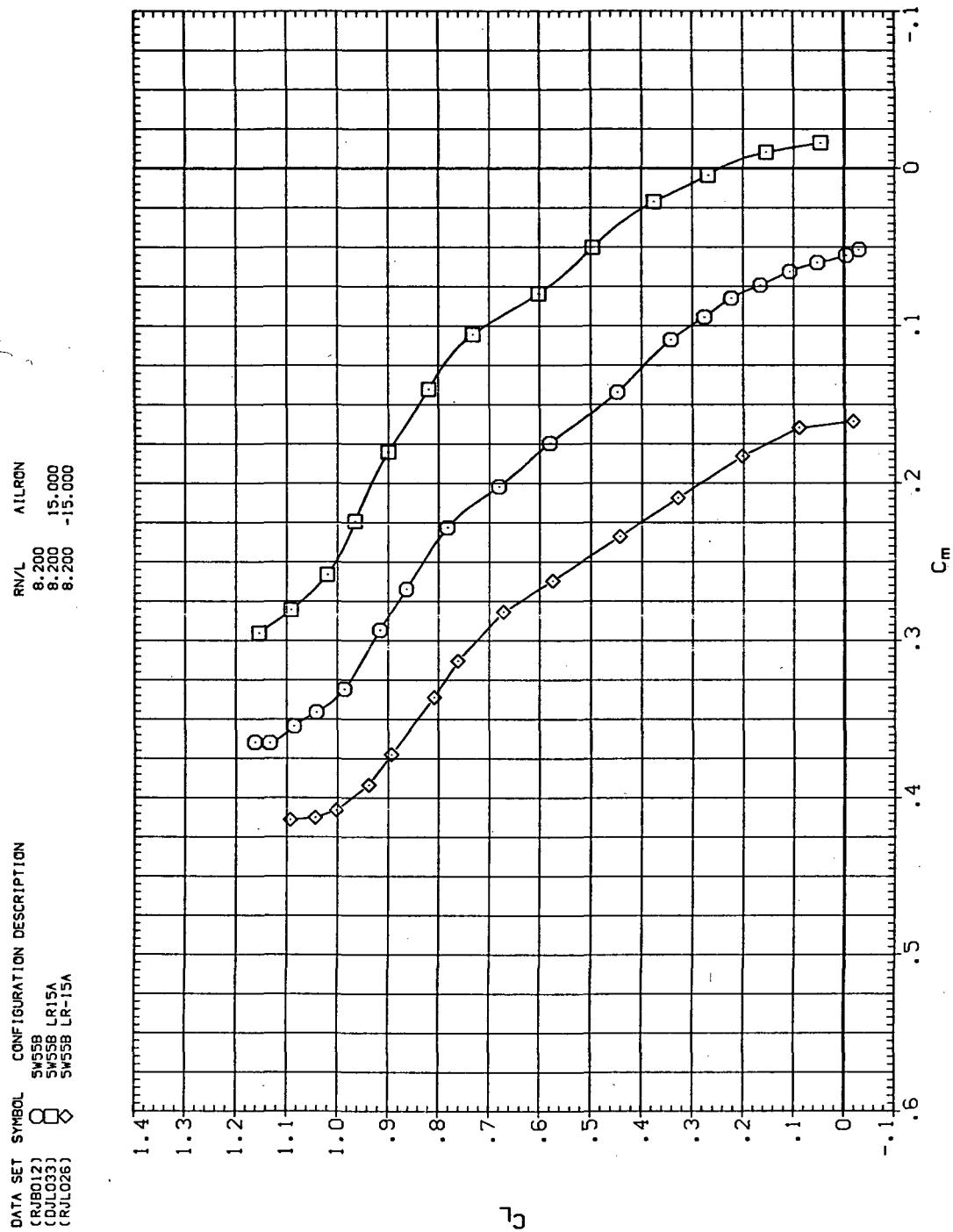
DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RIB012)	$\square$	SW55B	LR15A	RN/L	AIRLON
(DL033)	$\diamond$	SW55B	SW55B	8.200	15.000
(RJL028)	$\diamond$	SW55B	LR-15A	8.200	-15.000



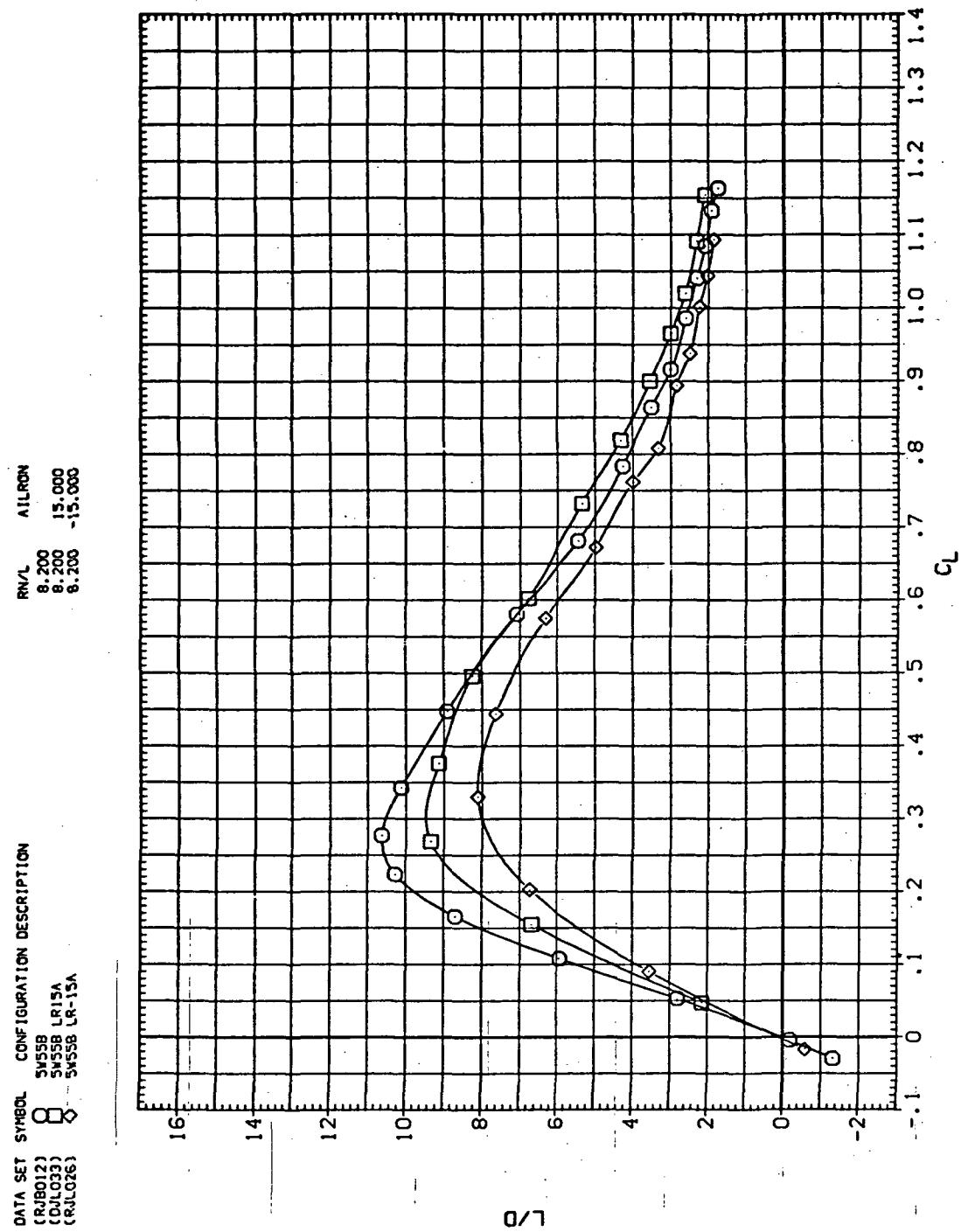
(b)  $C_D$  vs  $C_L$

Figure 40.—Continued.



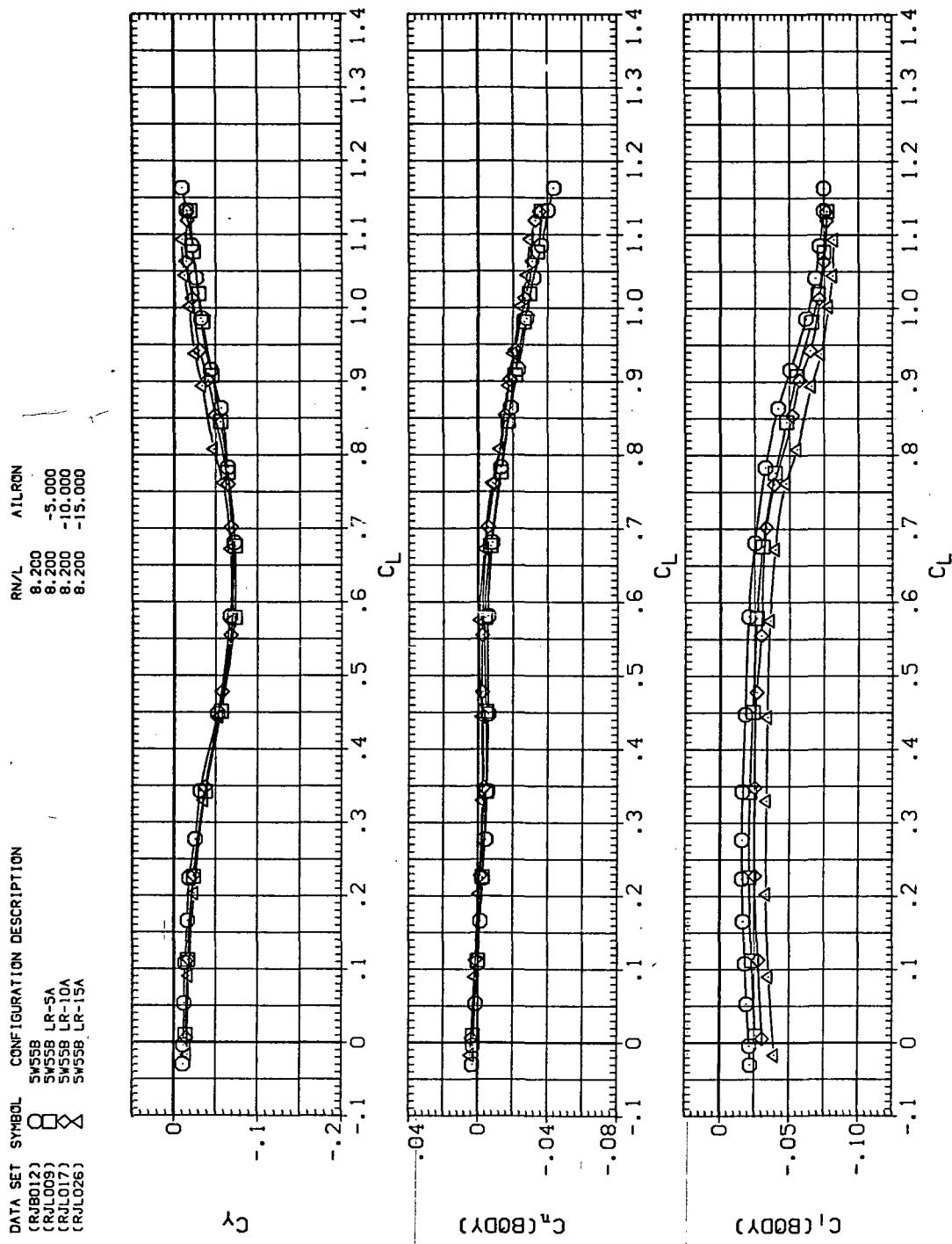
(c)  $C_L$  vs  $C_m$

Figure 40.—Continued.



(d)  $L/D$  vs  $C_L$

Figure 40.—Continued.



(e)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

Figure 40.—Continued.

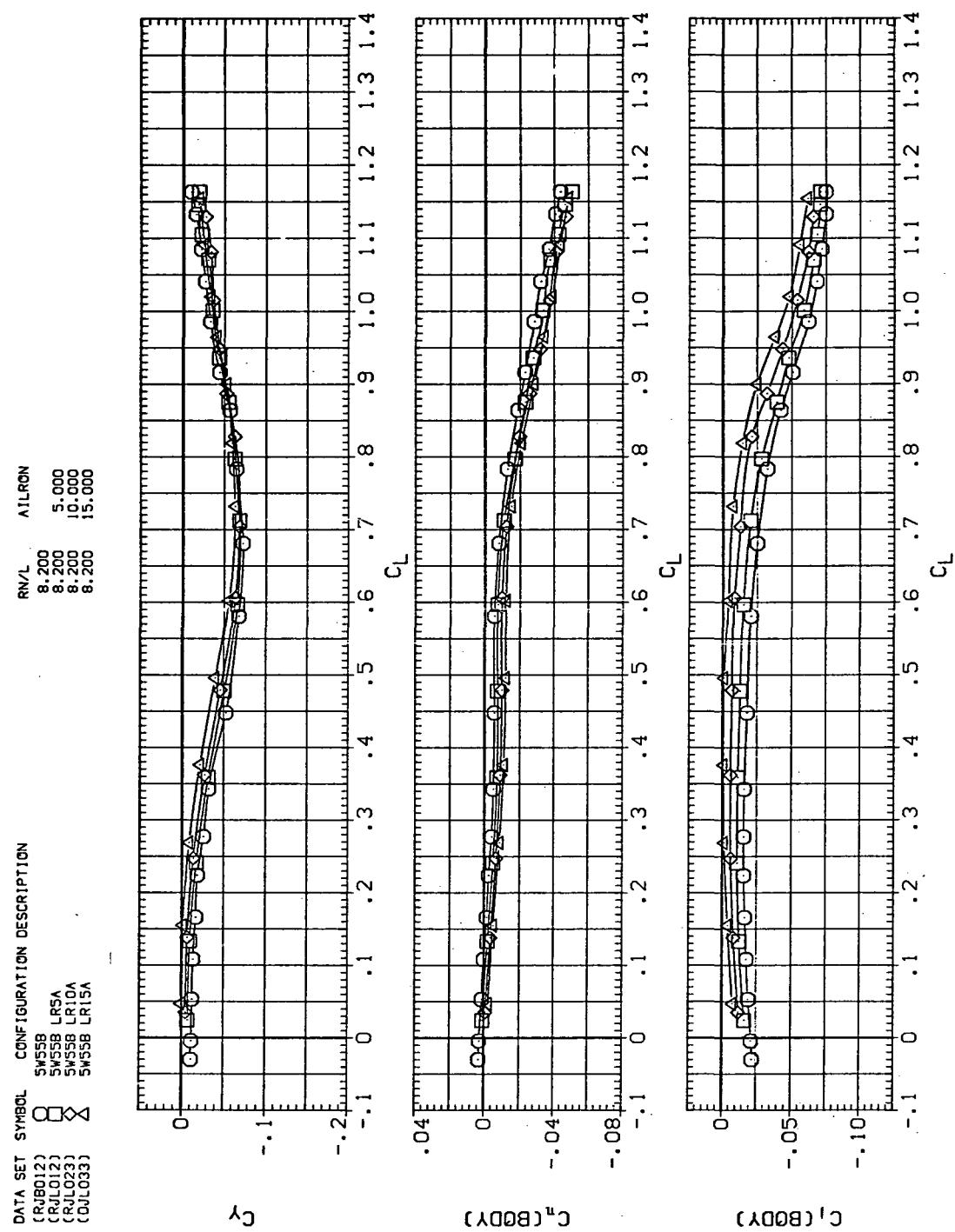
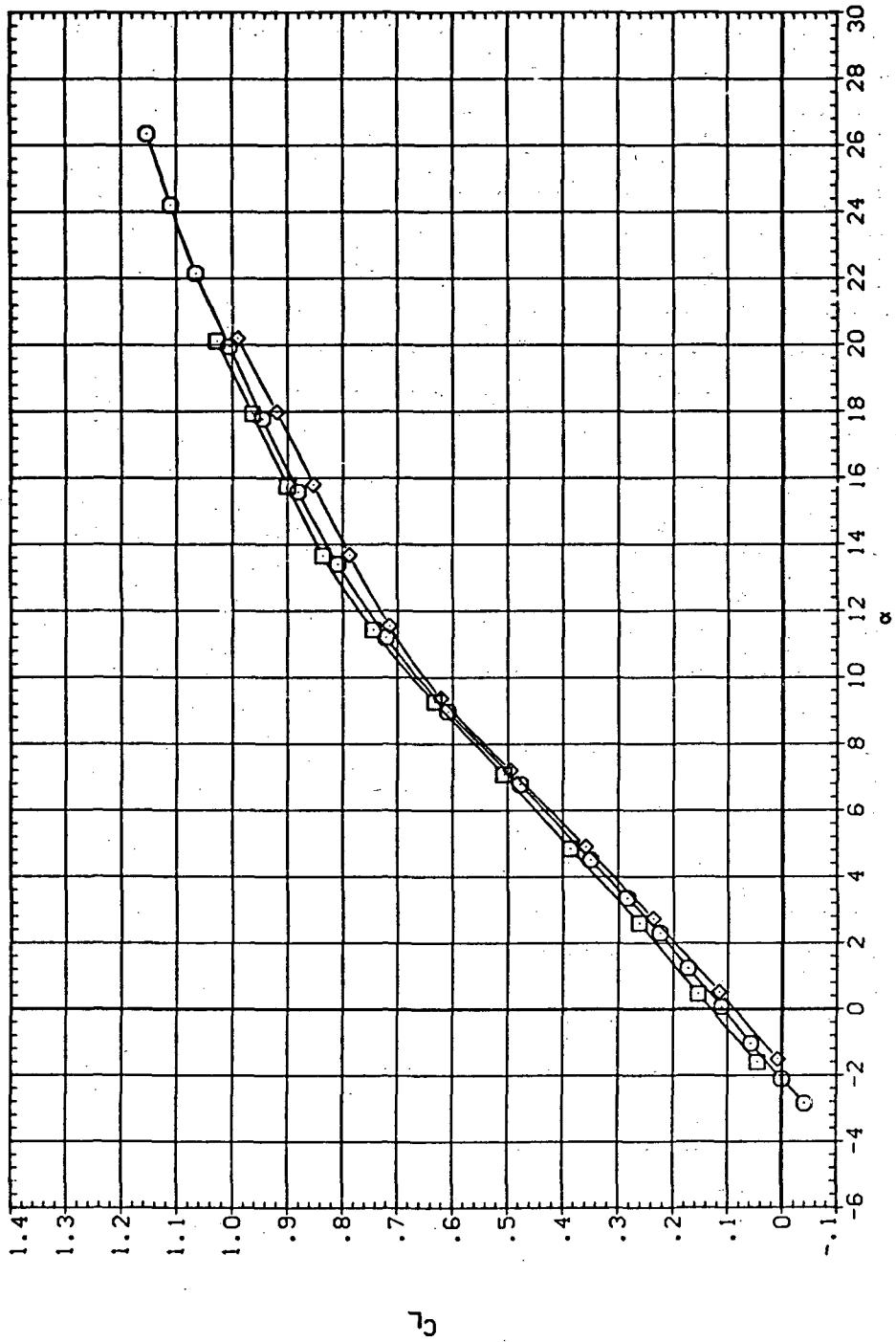
(f)  $C_Y$ ,  $C_n$ , and  $C_L$  vs.  $C_L$  (positive  $\Delta\delta_a$ 's).

Figure 40.— Concluded.

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	RN/L	AILERON
(R/B012)	○	SW558	8.200	15.000
(D/LC033)	□	SW558 LR-15A	8.200	-15.000
(R/JL026)	◊	SW558 LR-15A	8.200	-15.000



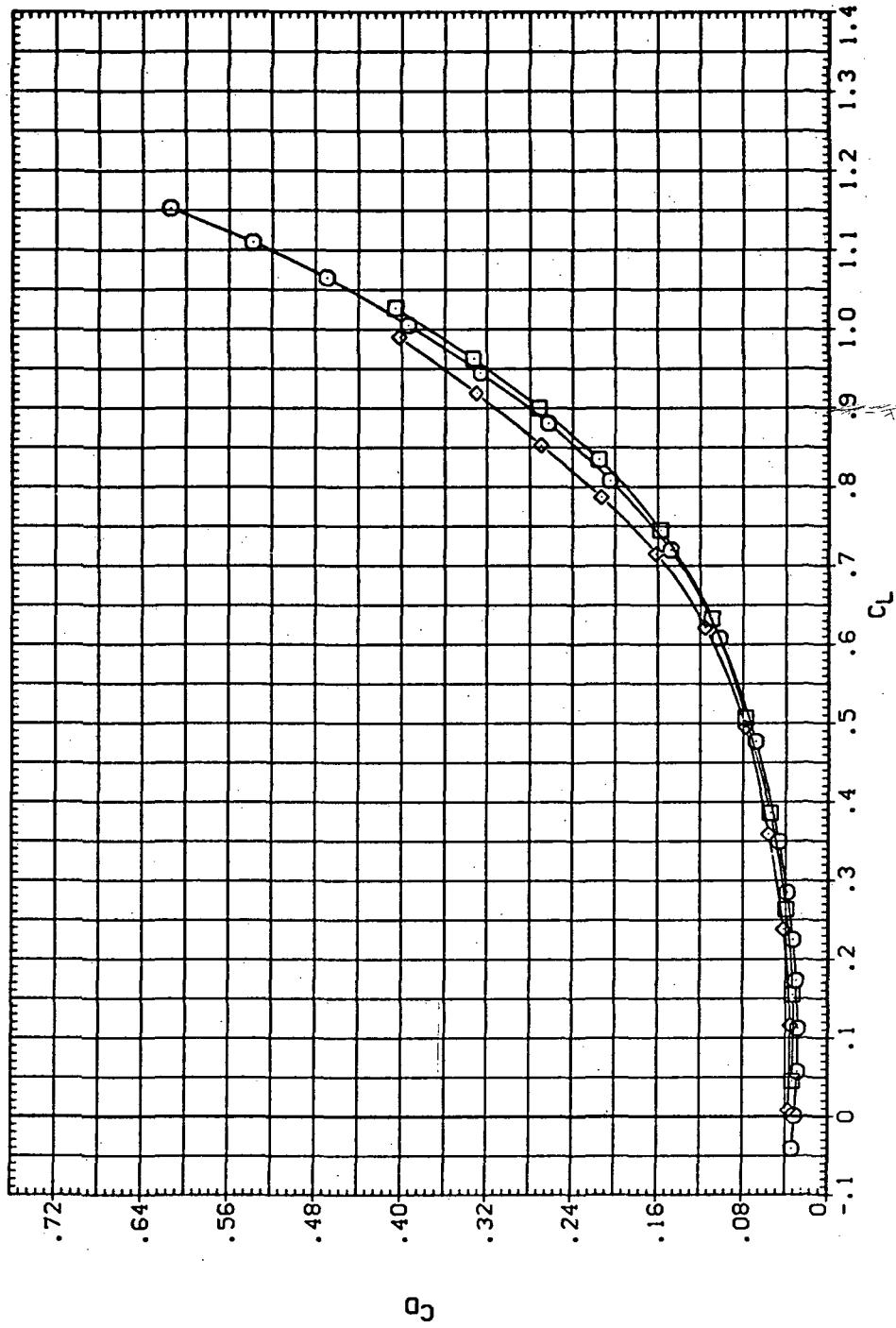
(a)  $C_L$  vs  $\alpha$

Figure 41.—Aileron effectiveness of the oblique wing with intermediate bend:

$$\Lambda = 55^\circ, M = 1.1.$$

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (RBO12) 8 SW55B  
 (QLO32) 8 SW55B LRSA  
 (RLQ26) SW55B LR-15A

RN/L AILRON  
 8.200 15.000  
 8.200 -15.000



(b)  $C_D$  vs  $C_L$

Figure 41.—Continued.

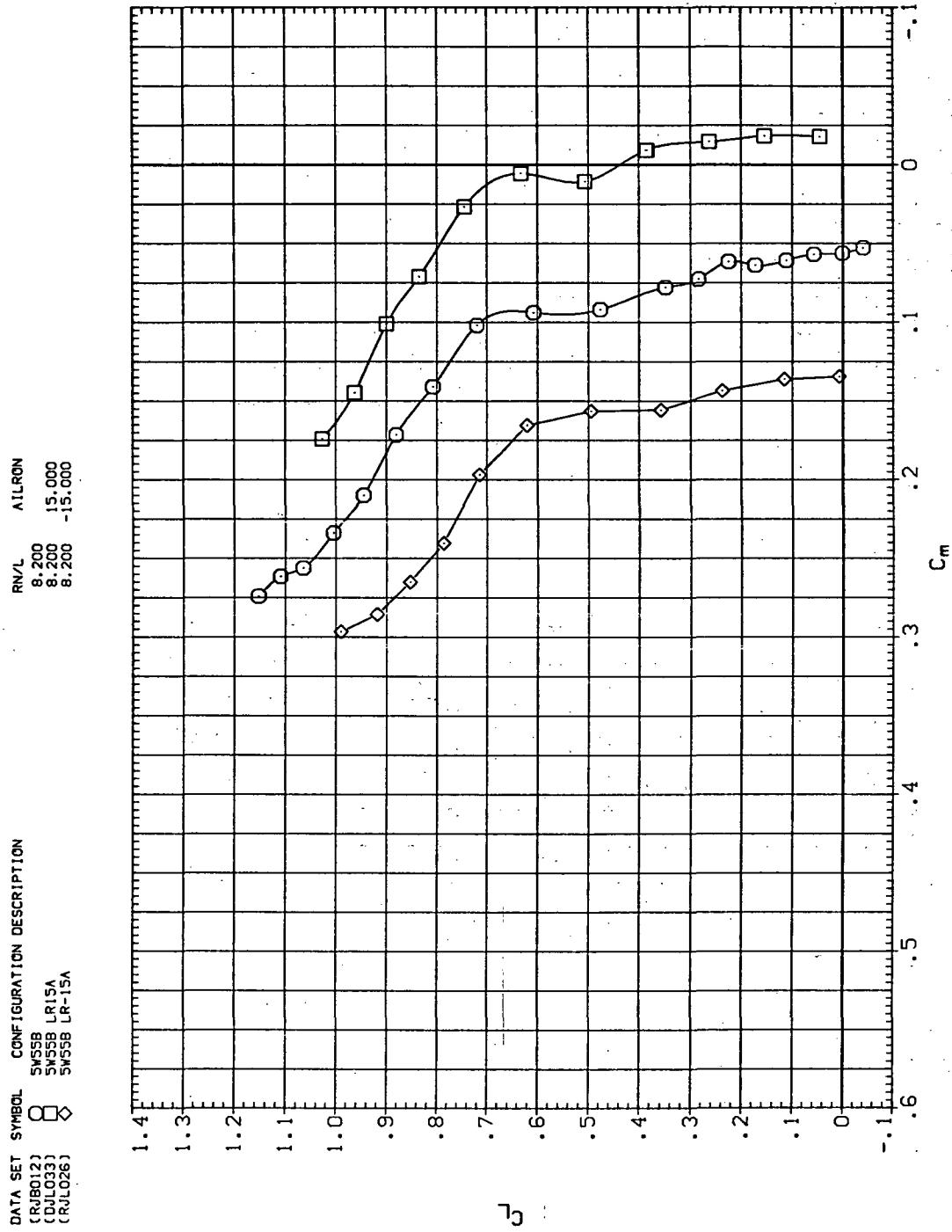
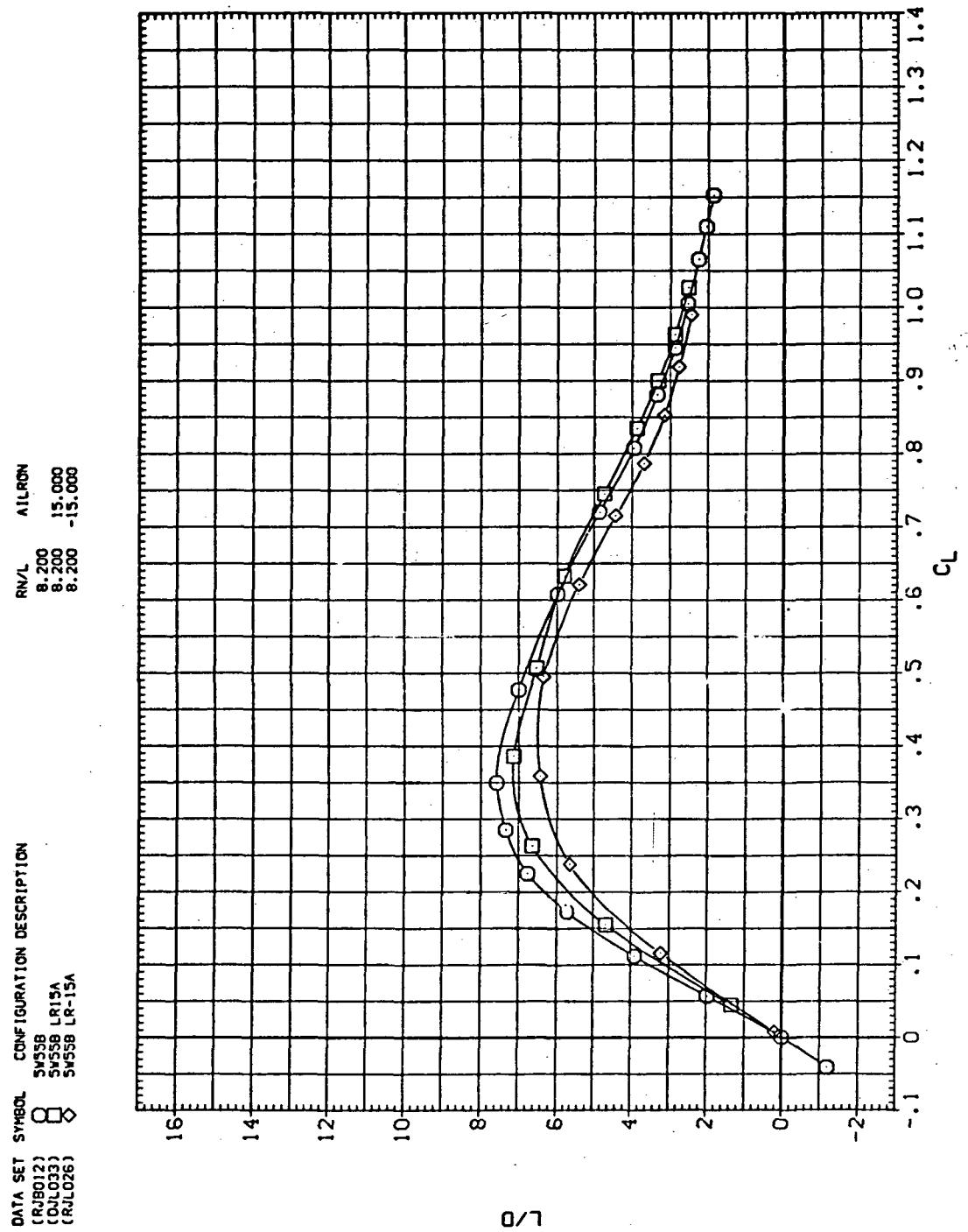
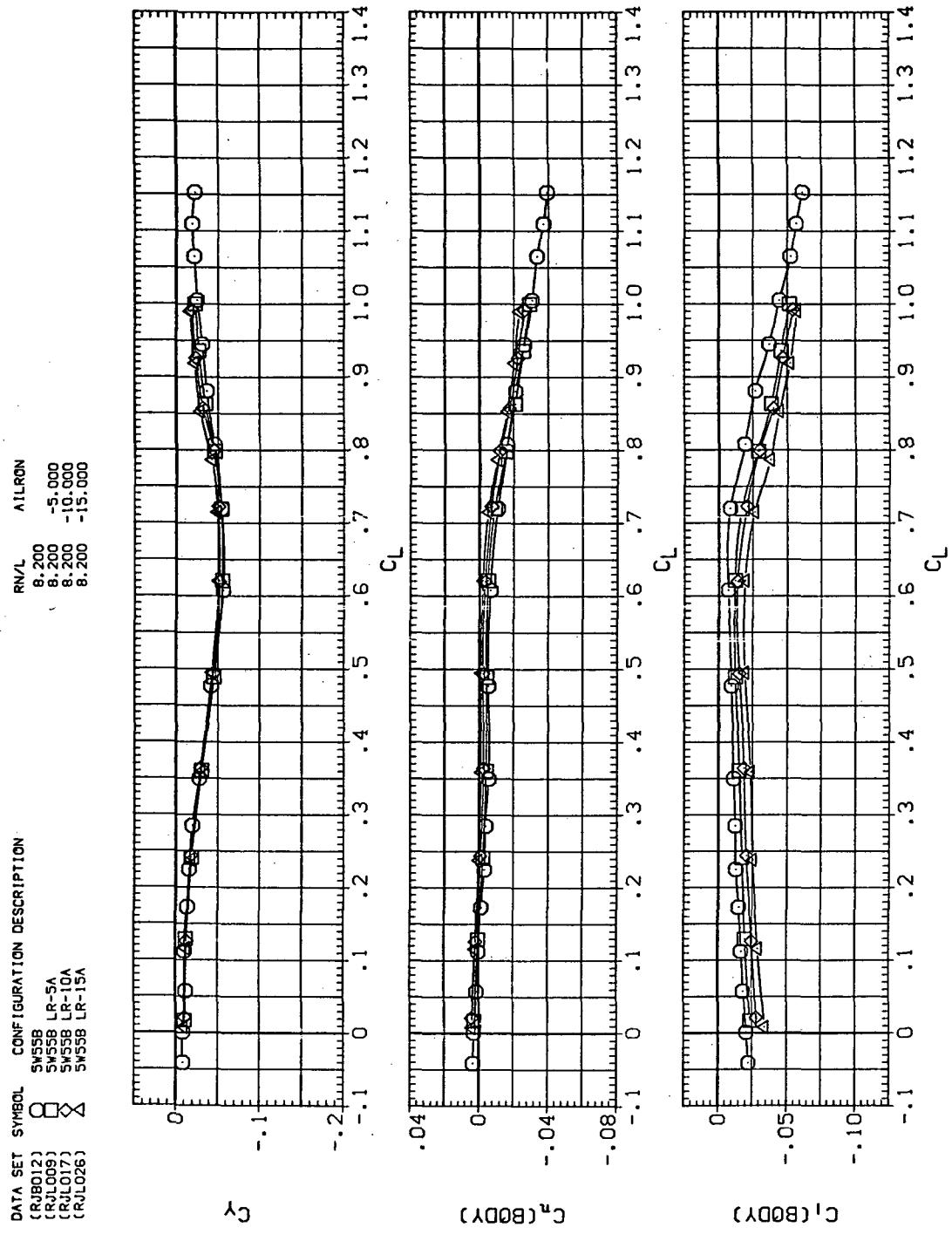
(c)  $C_L$  vs  $C_m$ 

Figure 41.—Continued.



(d)  $L/D$  vs  $C_L$

Figure 41.—Continued.

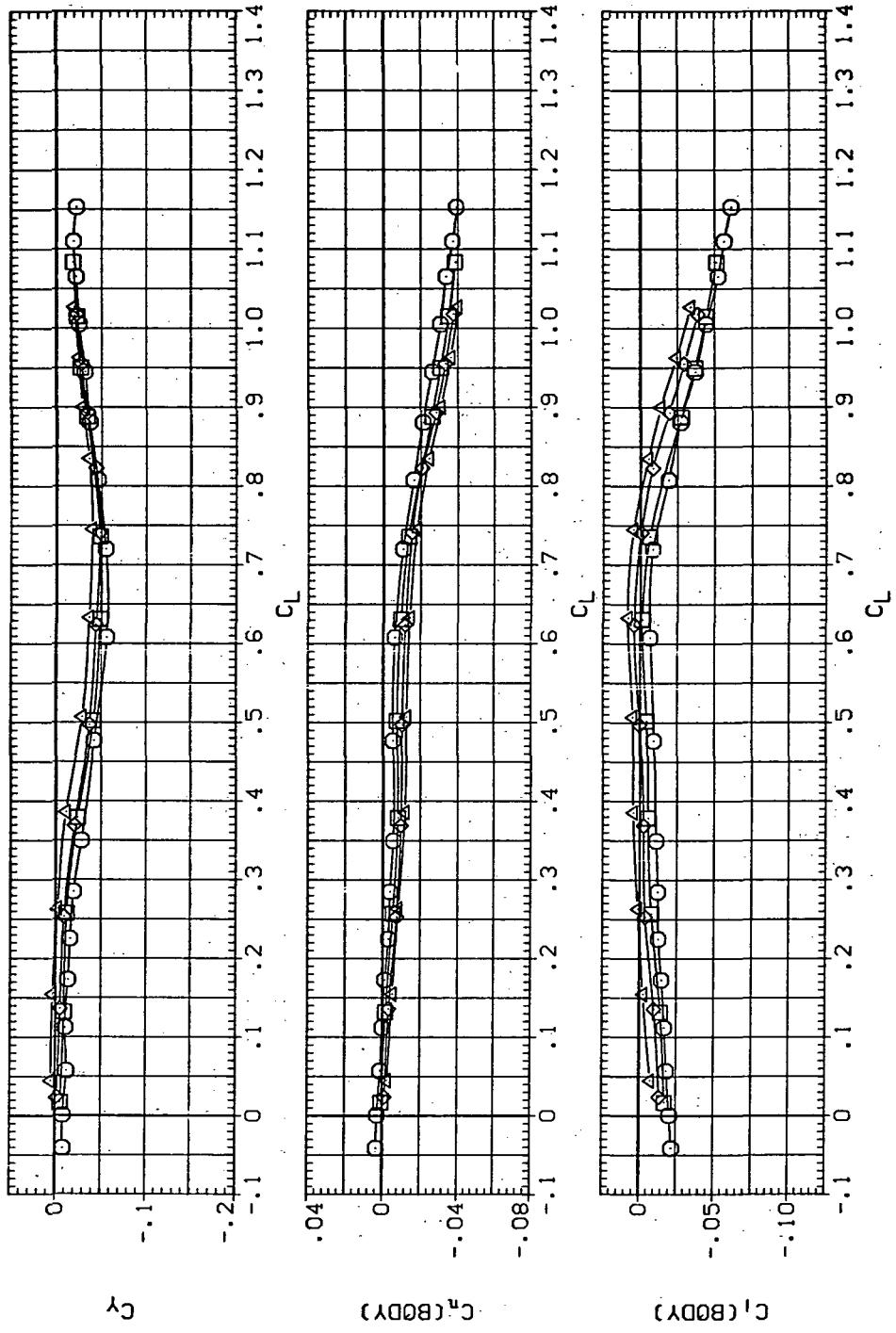


(e)  $C_Y$ ,  $C_n$ , and  $C_d$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

Figure 41.—Continued.

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(RIBD12)	○	5W55B LR5A
(RJL012)	□	5W55B LR10A
(RJL033)	△	5W55B LR15A
(CJL033)	▽	

RN/L	AIRRON
8,200	5,000
8,200	10,000
8,200	15,000



(f)  $C_Y$ ,  $C_n$ , and  $C_D$  vs  $C_L$  (positive  $\Delta\delta_a$ 's).

Figure 41.—Concluded.

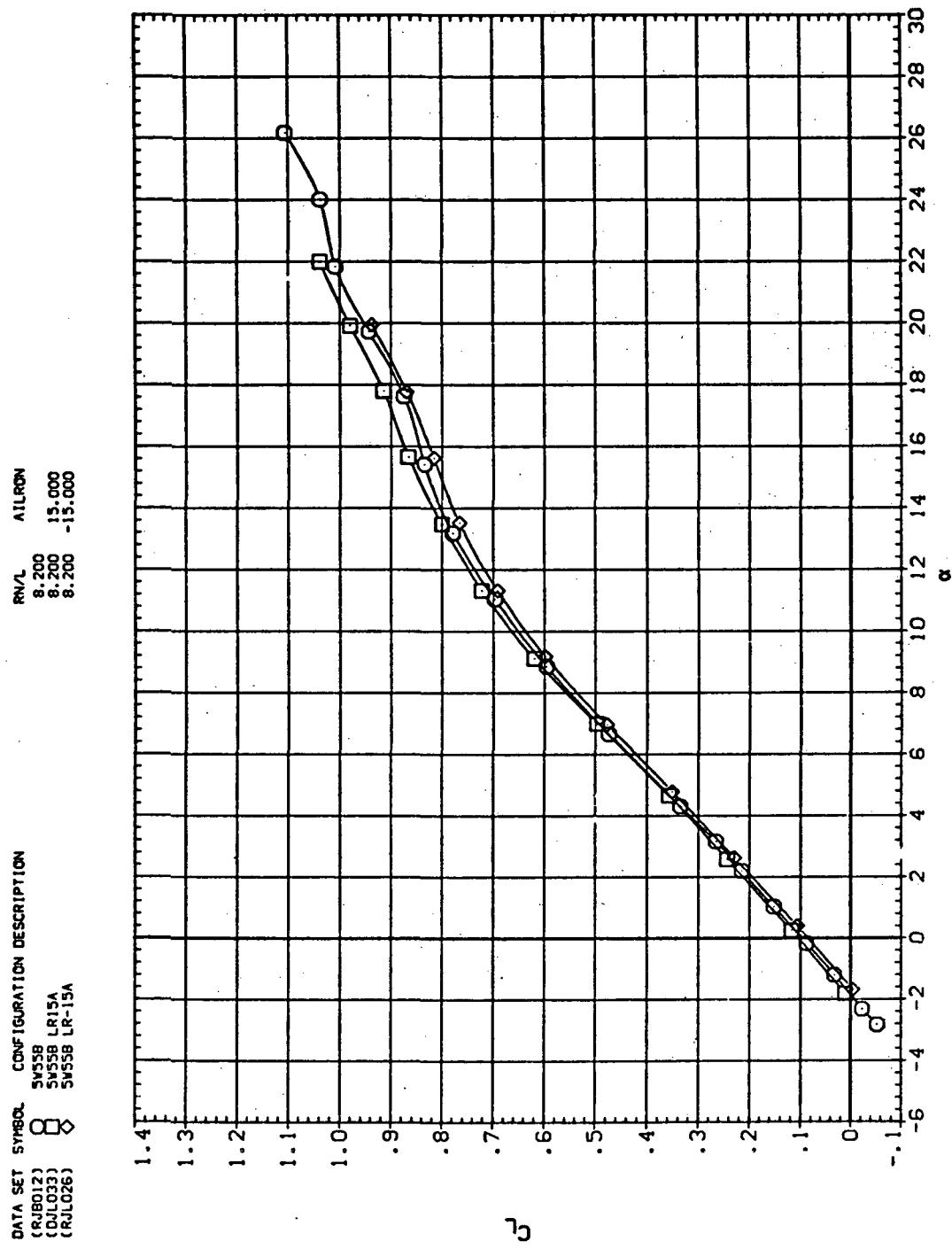
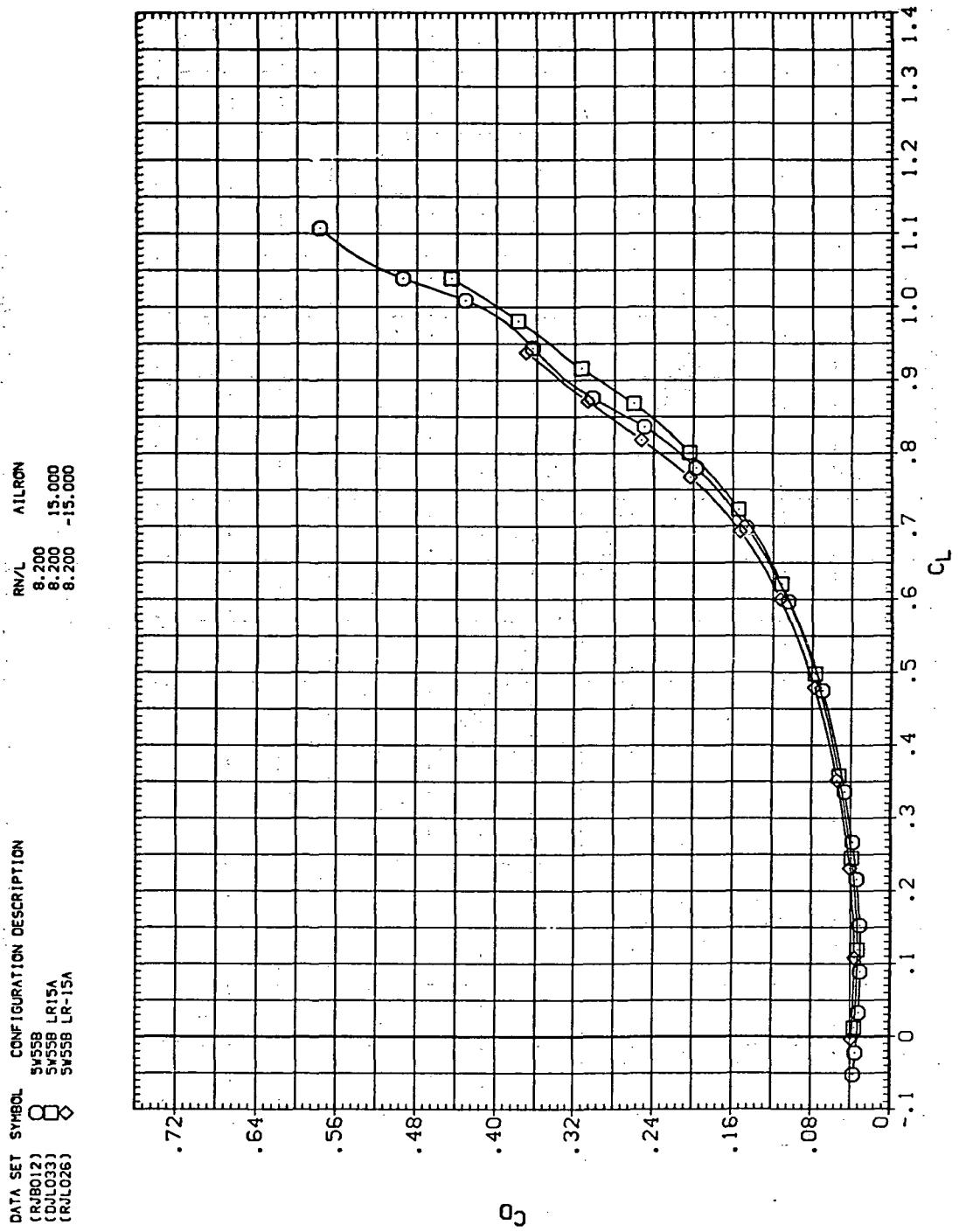
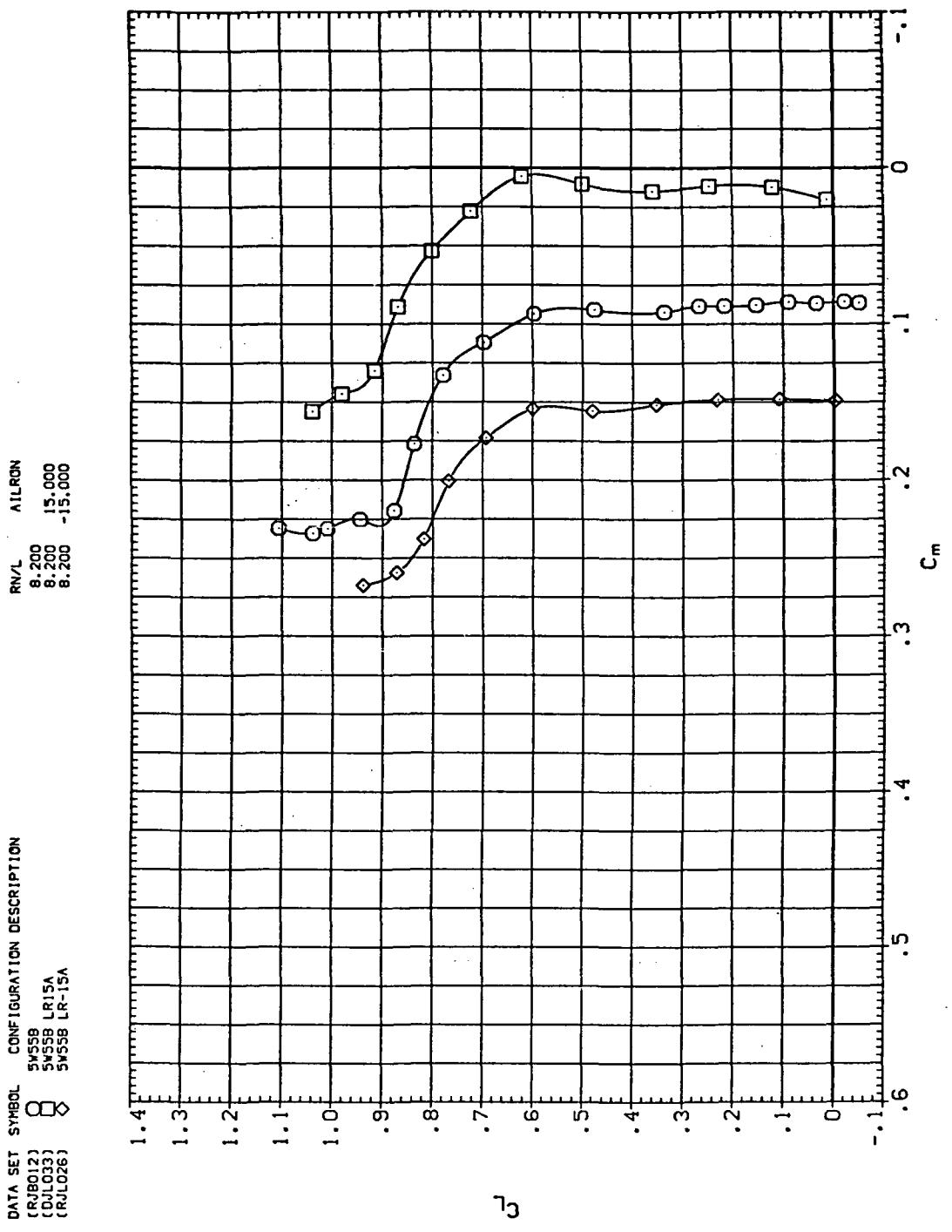


Figure 42.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 55^\circ, M = 1.20.$



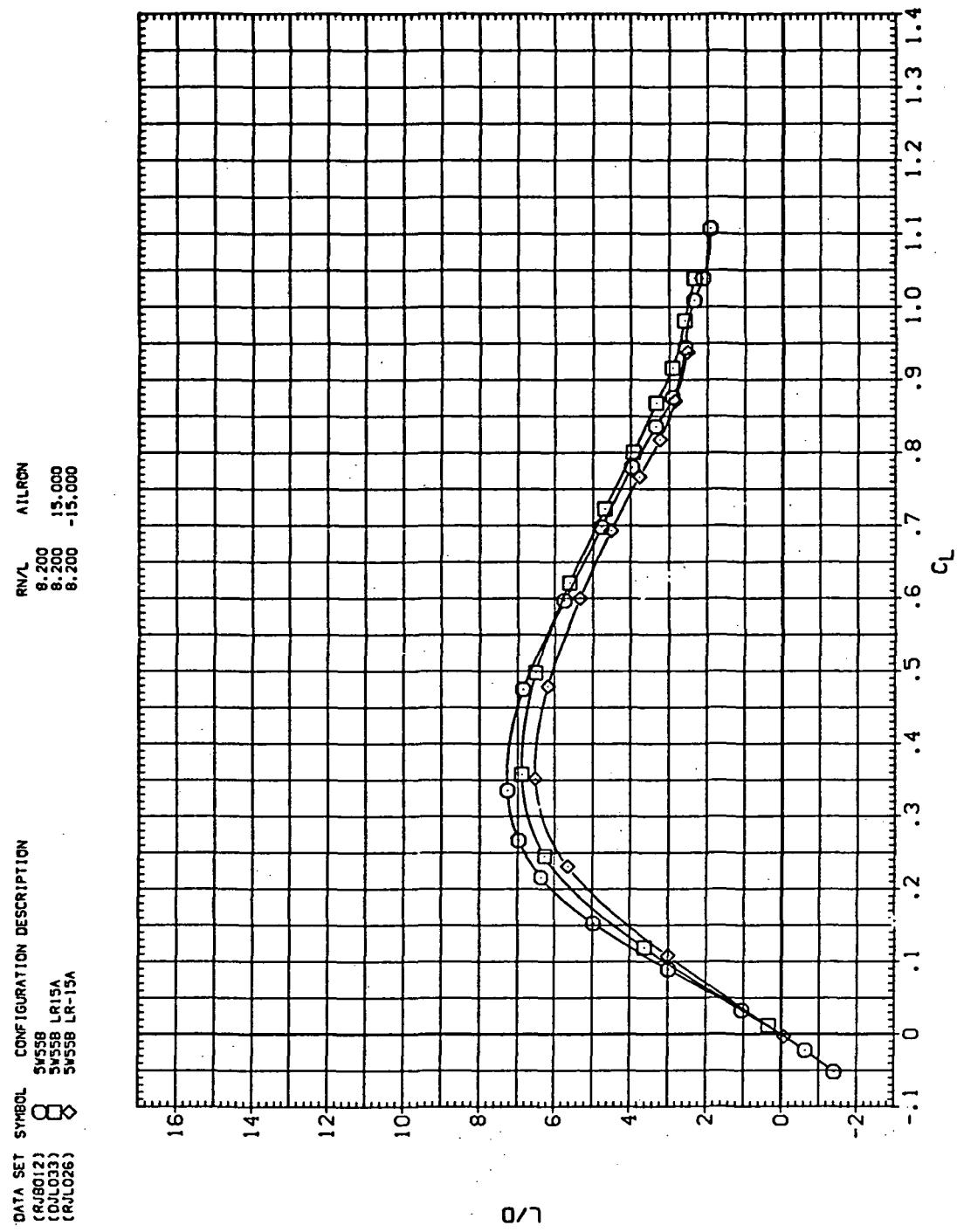
(b)  $C_D$  vs  $C_L$

Figure 42.—Continued.



(c)  $C_L$  vs  $C_m$

Figure 42.—Continued.

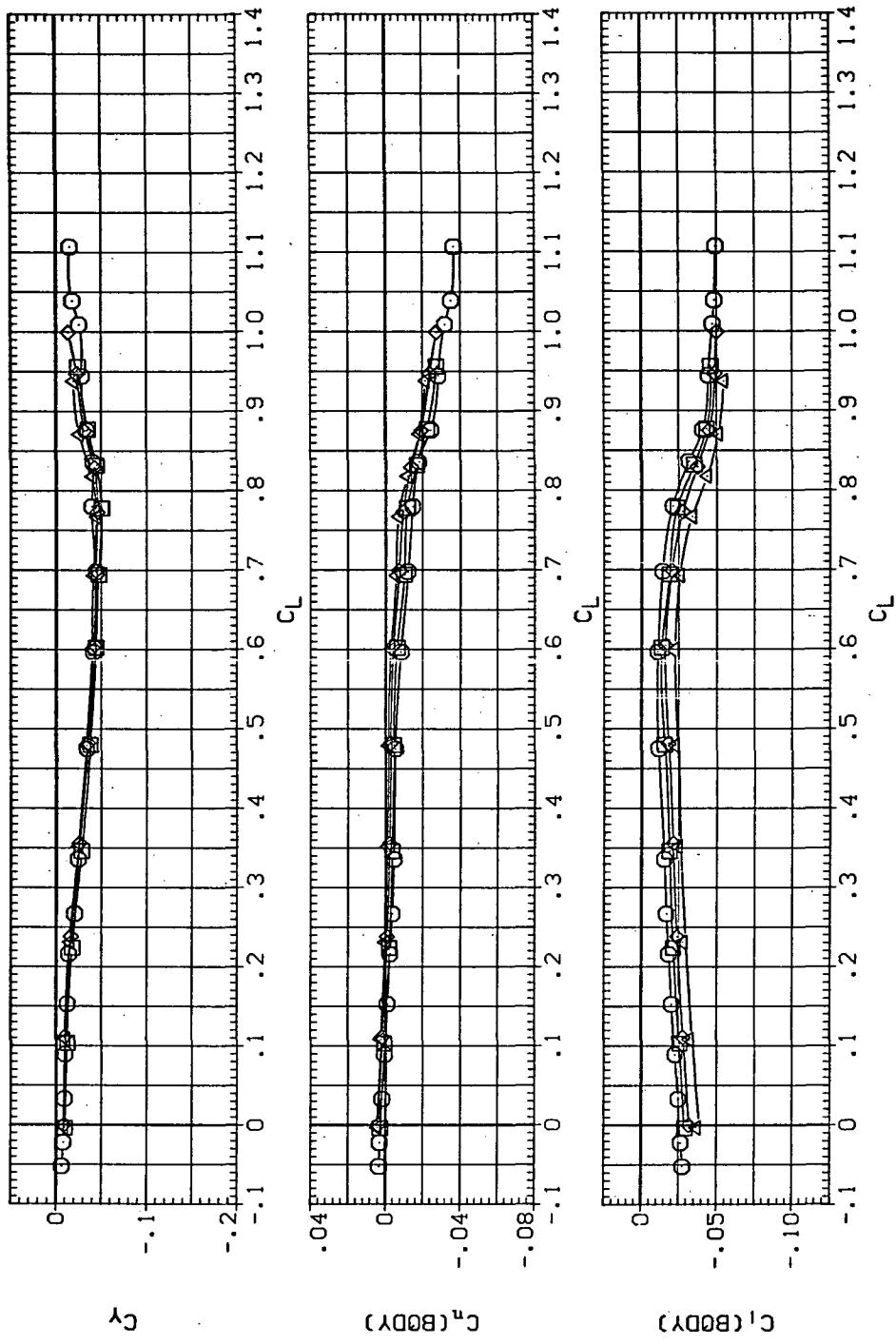


(d)  $L/D$  vs  $C_L$

Figure 42.—Continued.

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(RJL012)	○	SW55B
(RJL009)	□	SW55B LR-5A
(RJL017)	×	SW55B LR-10A
(RJL026)	△	SW55B LR-15A

RN/L	ATLRON
8.200	-5,000
8.200	-10,000
8.200	-15,000



(e)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

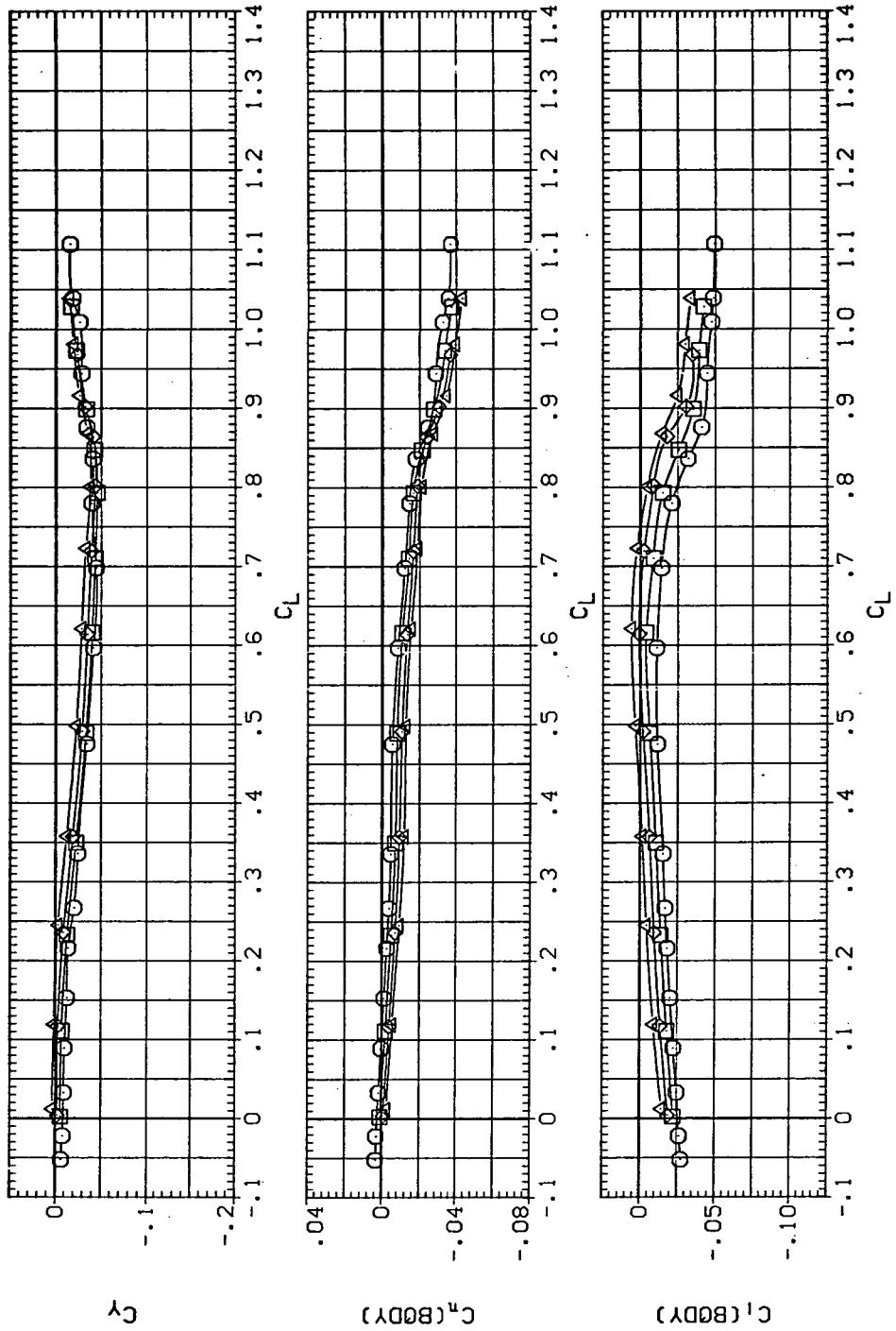
Figure 42.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

RJB012)	$\square$	SW55B	LRSA	AIRRON
RJL012)	$\square \times$	SW55B	LRDA	8.200 5.000
RJL023)	$\square \times$	SW55B	LRDA	8.200 10.000
DJL033)	$\square \times$	SW55B	LRSA	8.200 15.000

RN/L

8.200	5.000
8.200	10.000
8.200	15.000



(f)  $C_Y$ ,  $C_n$ , and  $C_L$  vs.  $C_L$  (positive  $\Delta\delta_a$ 's).

Figure 42.— Concluded.

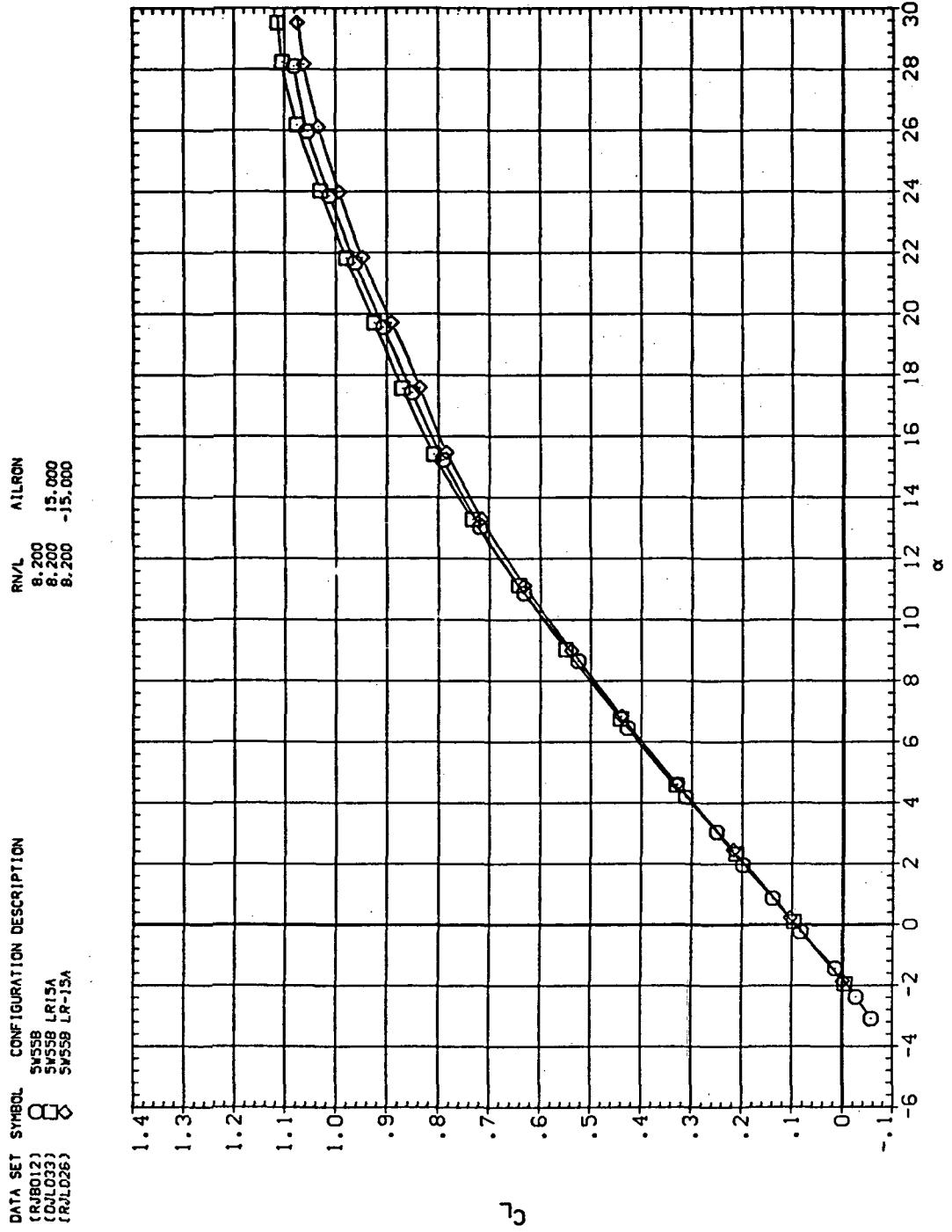
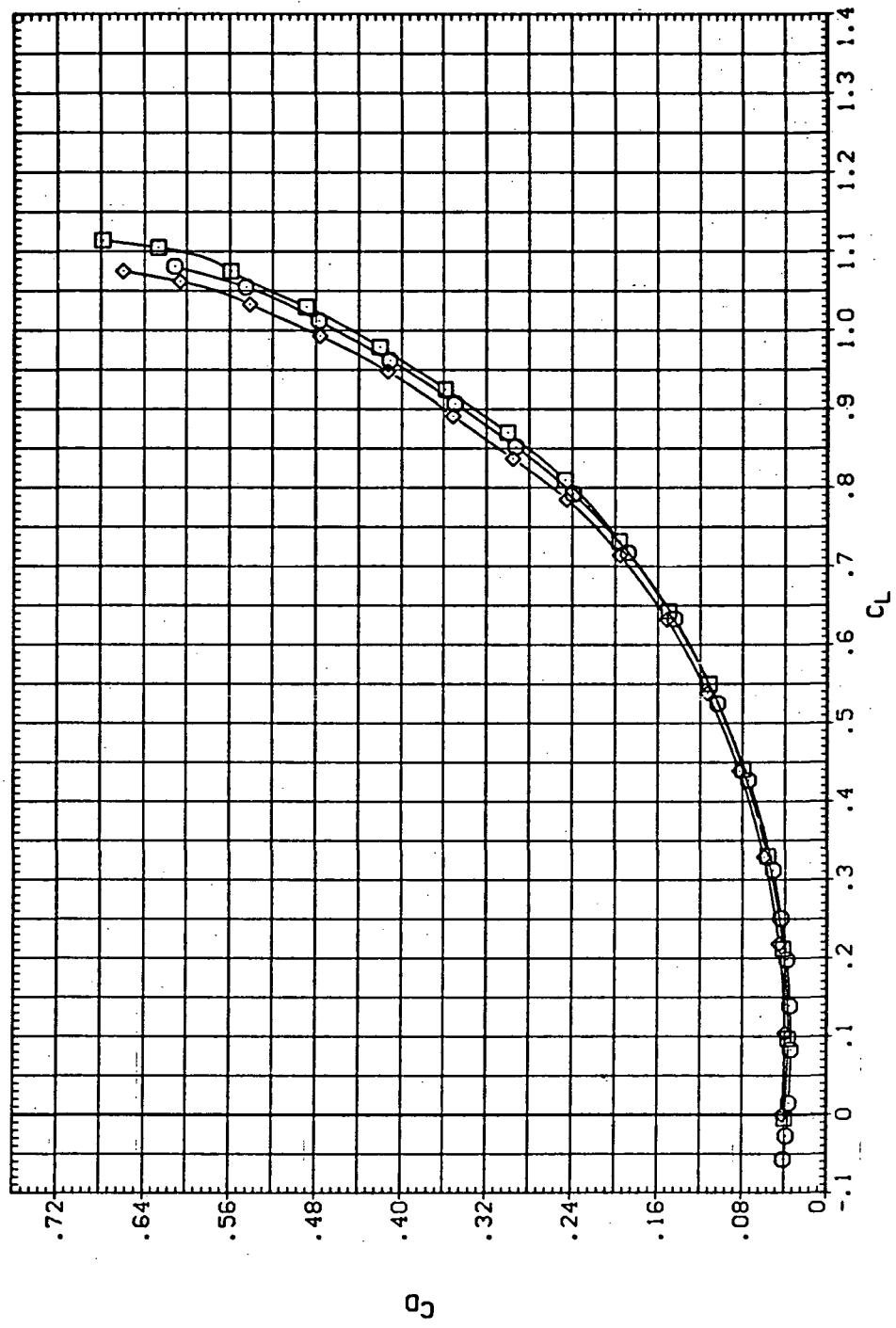
(a)  $C_L$  vs  $\alpha$ 

Figure 43.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 55^\circ, M = 1.40.$

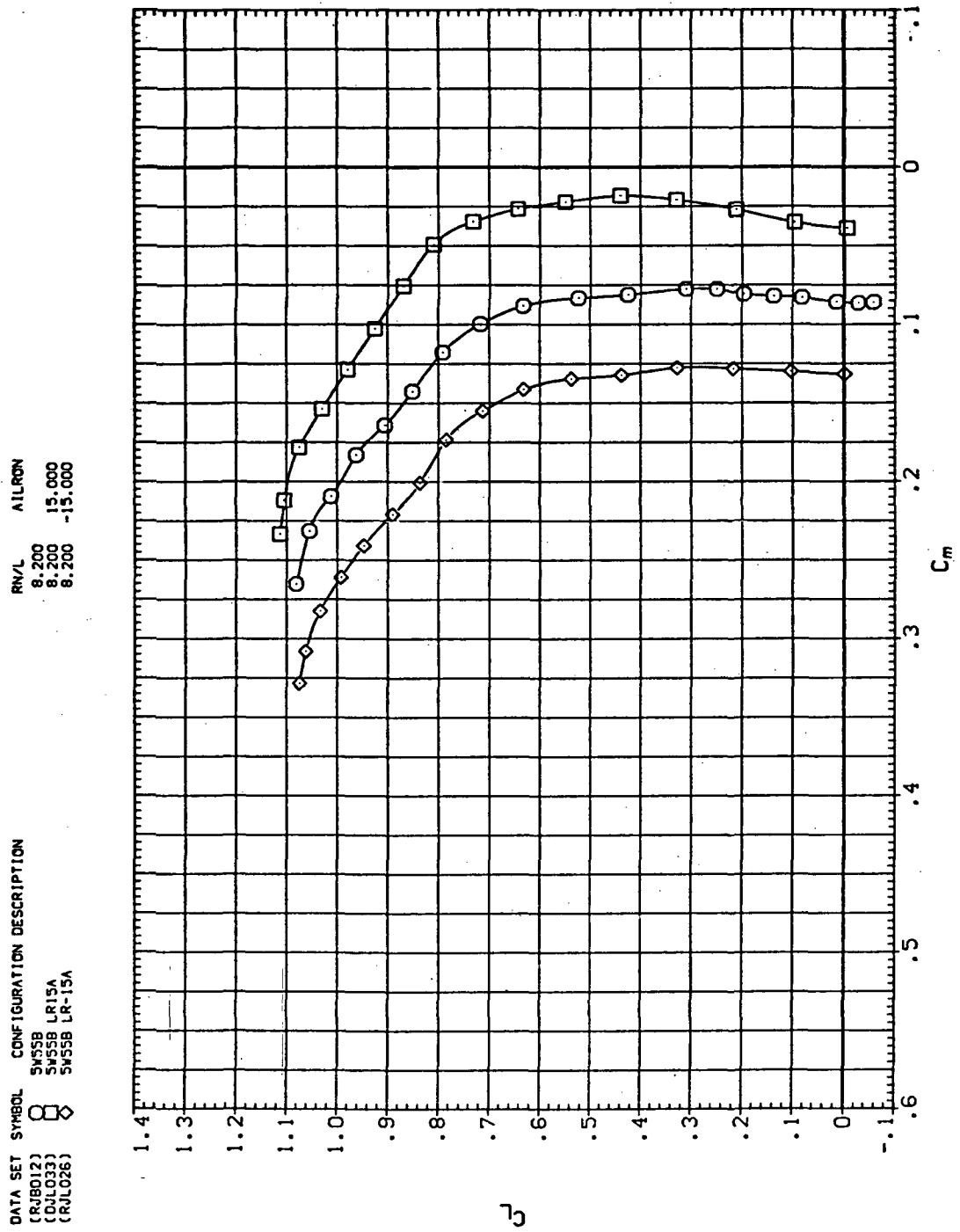
DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (RJ8012) SJ558  
 (RJL033) SJ558 LR-15A  
 (RJL026) SJ558 LR-15A

RN/C AILROW  
 6.200 15.000  
 8.200 -15.000  
 8.200



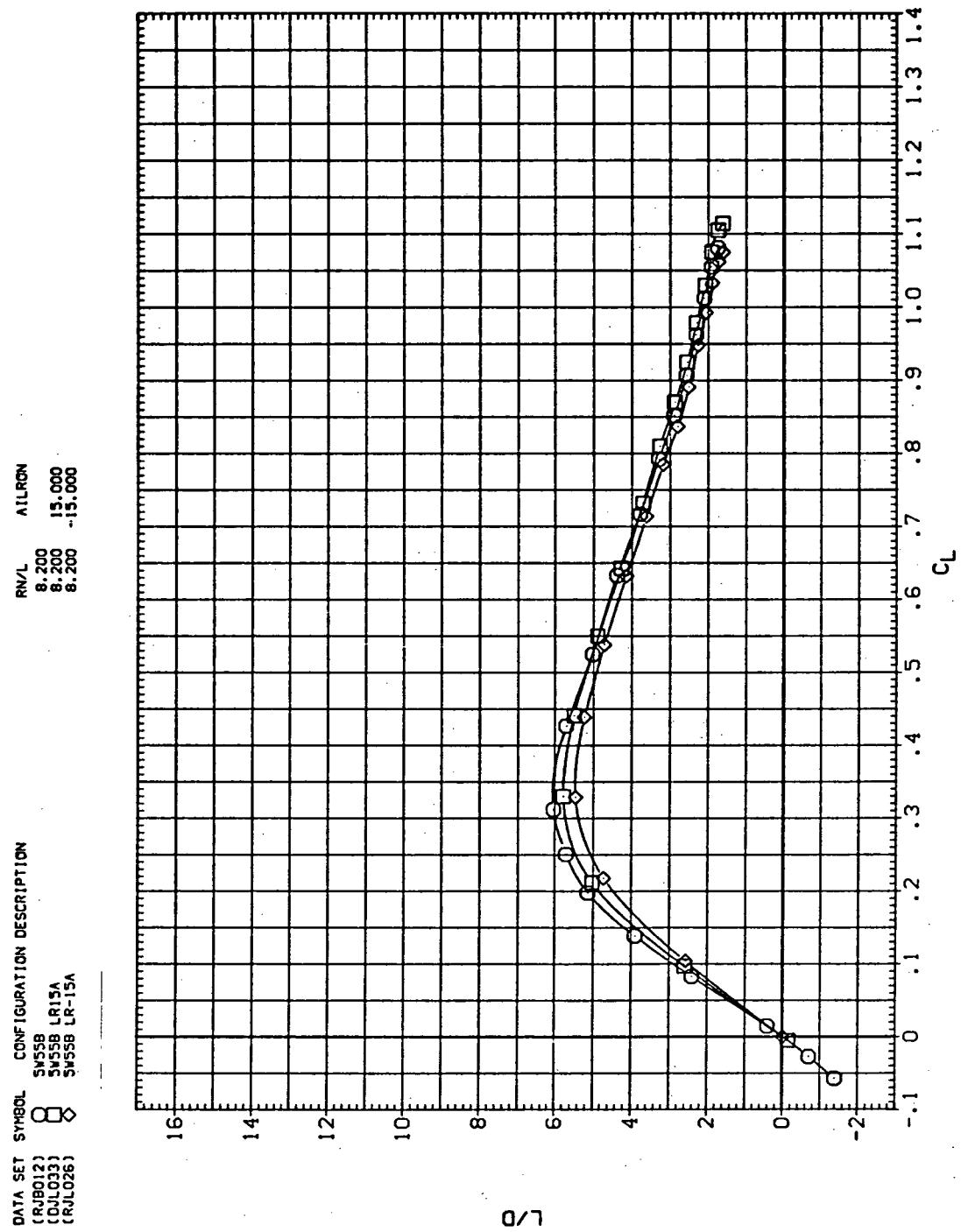
(b)  $C_D$  vs  $C_L$

Figure 43.— Continued.



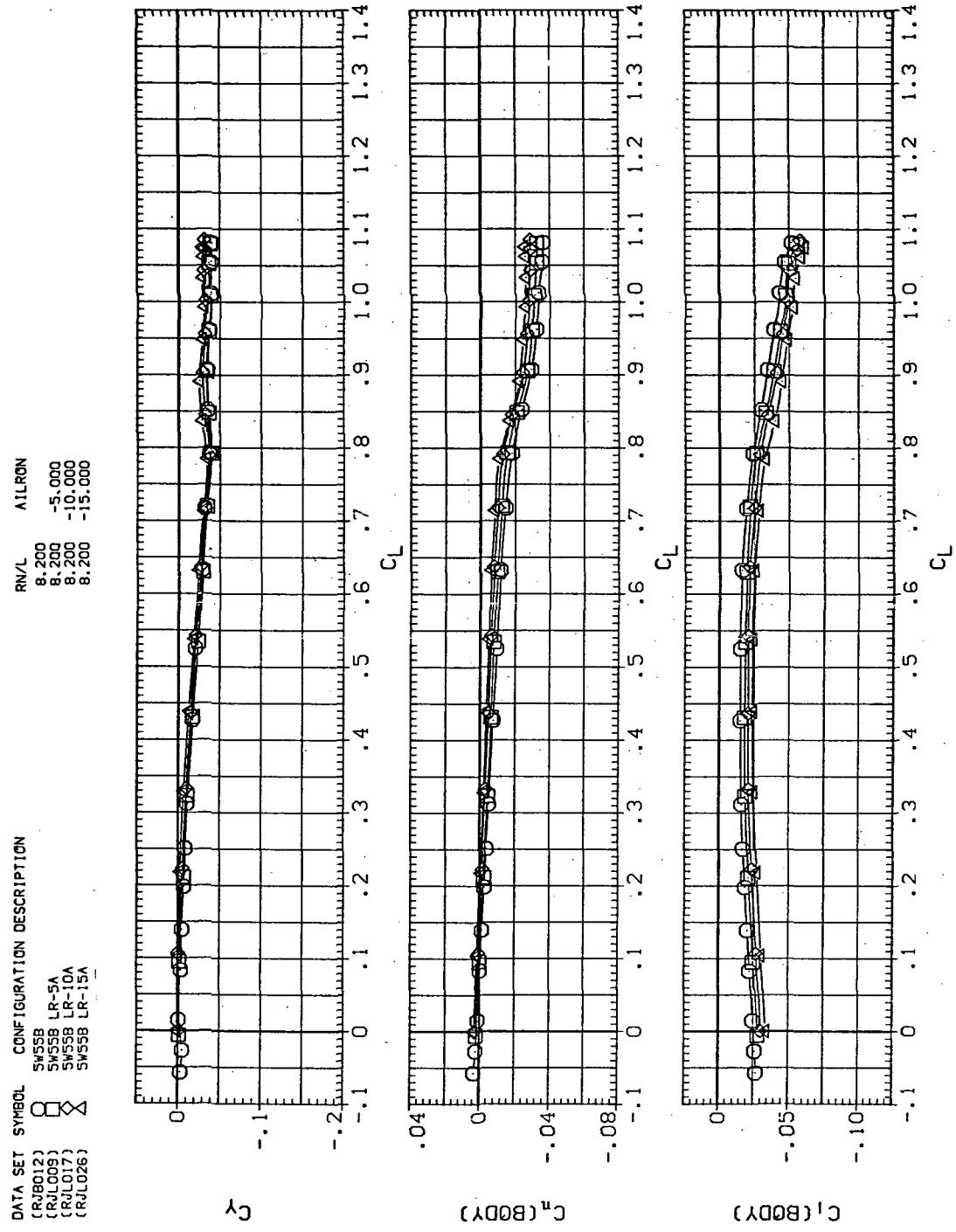
(c)  $C_L$  vs  $C_m$

Figure 43.—Continued.



(d)  $L/D$  vs  $C_L$

Figure 43.— Continued.



(e)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

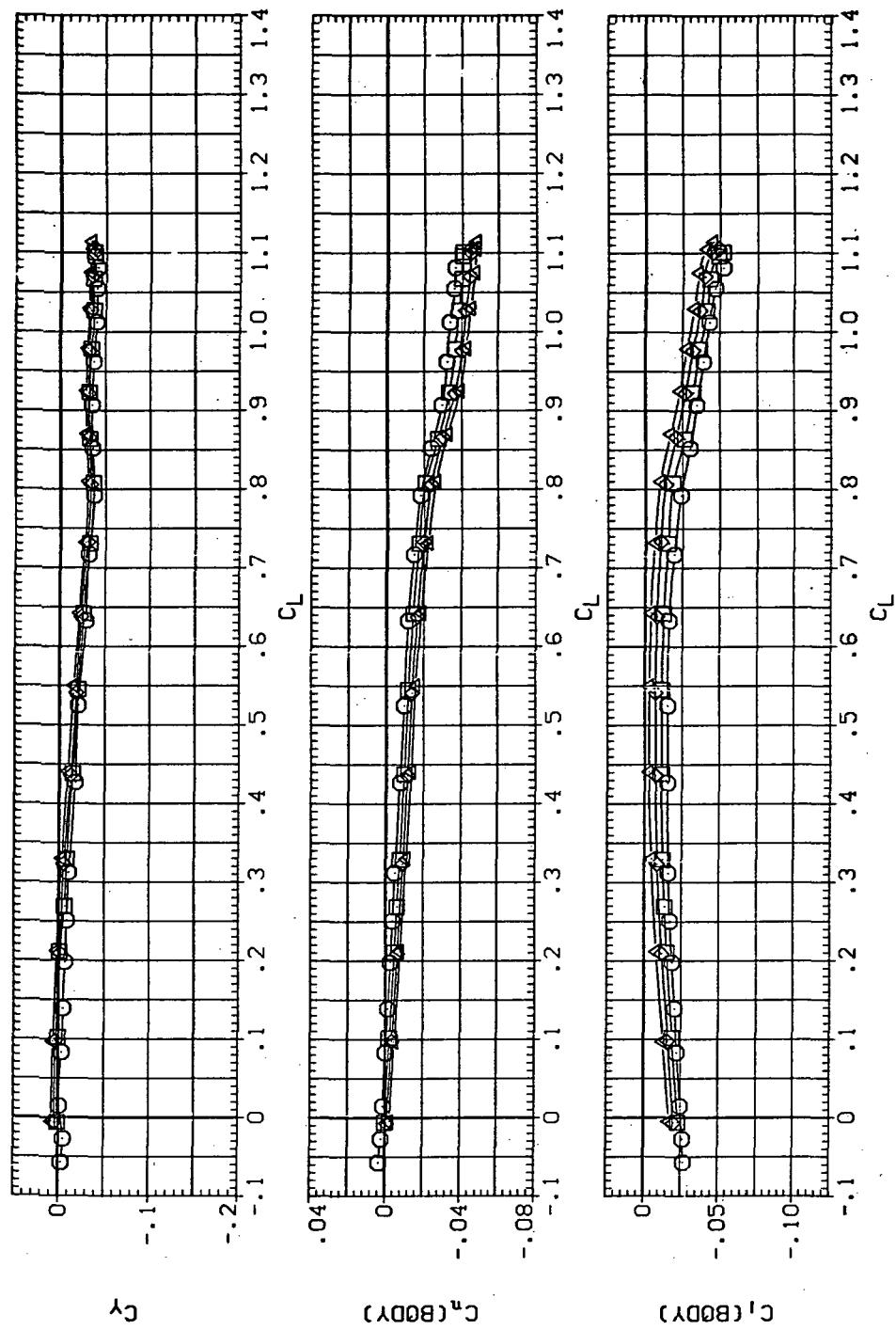
Figure 43.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RJ-B012)	$\circ$	SWSB
(RL-L012)	$\square$	SR55B LRF5A
(RL-Q33)	$\times$	SWSB LR10A
(DL-Q33)	$\Delta$	SWSB LR15A

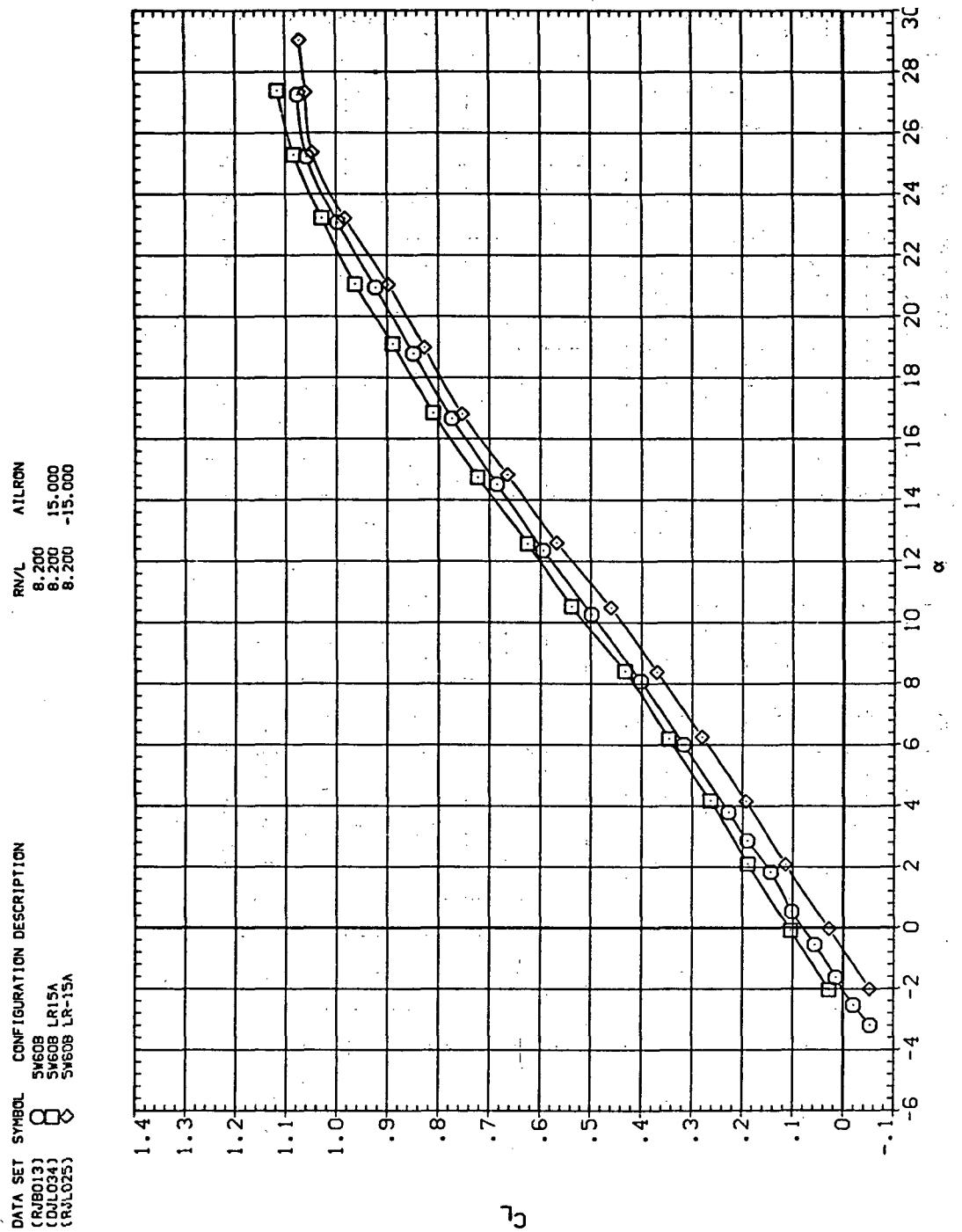
RN/L ATIRON

8.200	5.000
8.200	10.000
8.200	15.000



(f)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (positive  $\Delta \delta_a$ 's).

Figure 43.— Concluded.

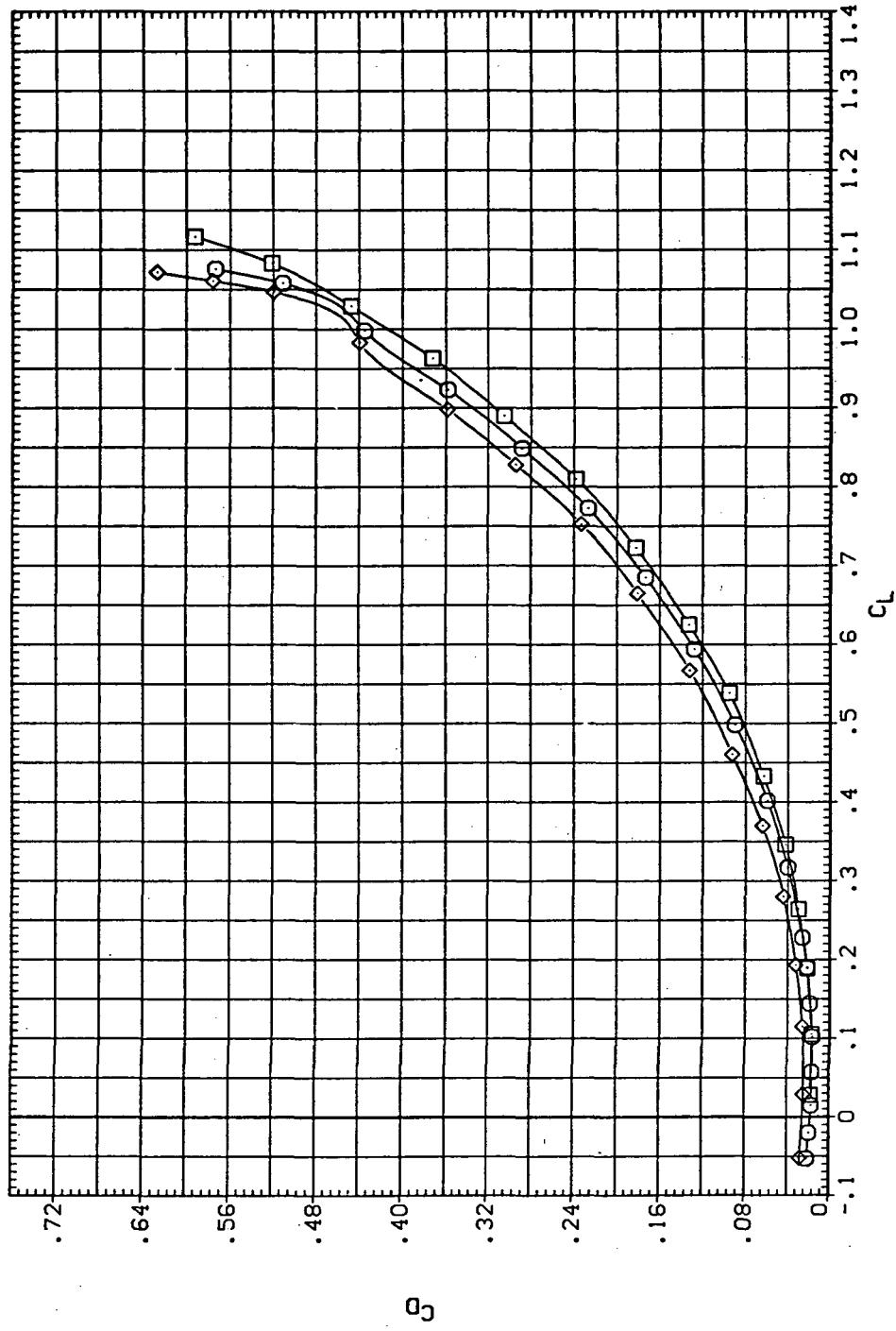


(a)  $C_L$  vs  $\alpha$

Figure 44.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 60^\circ, M = 0.60$ .

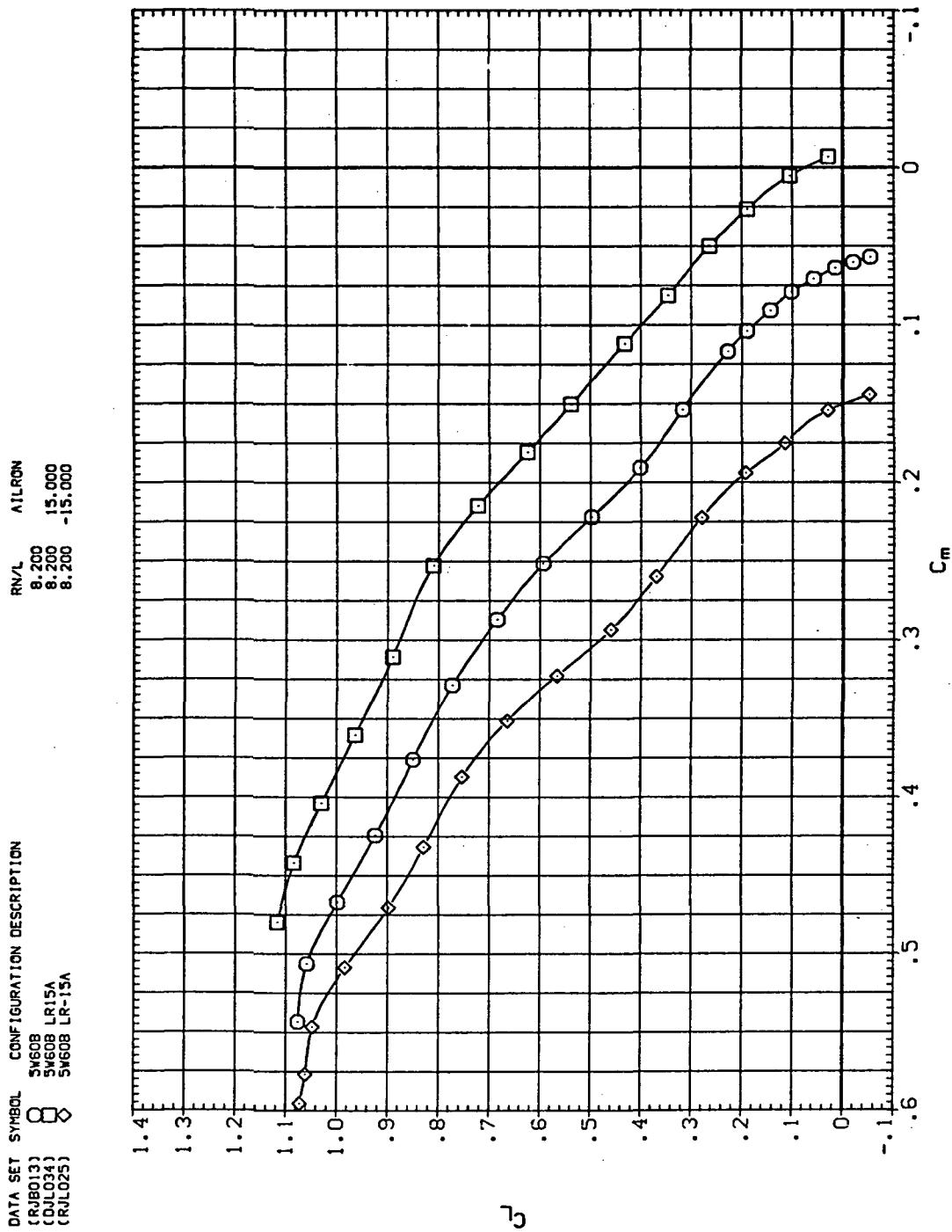
DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (R9803) O SW608 LR1SA  
 (DOL03) □ SW608 LR1SA  
 (RL025) ◇ SW608 LR-1SA

RN/L AIRCON  
 8.200 8.200 15.000  
 8.200 -8.200 -15.000

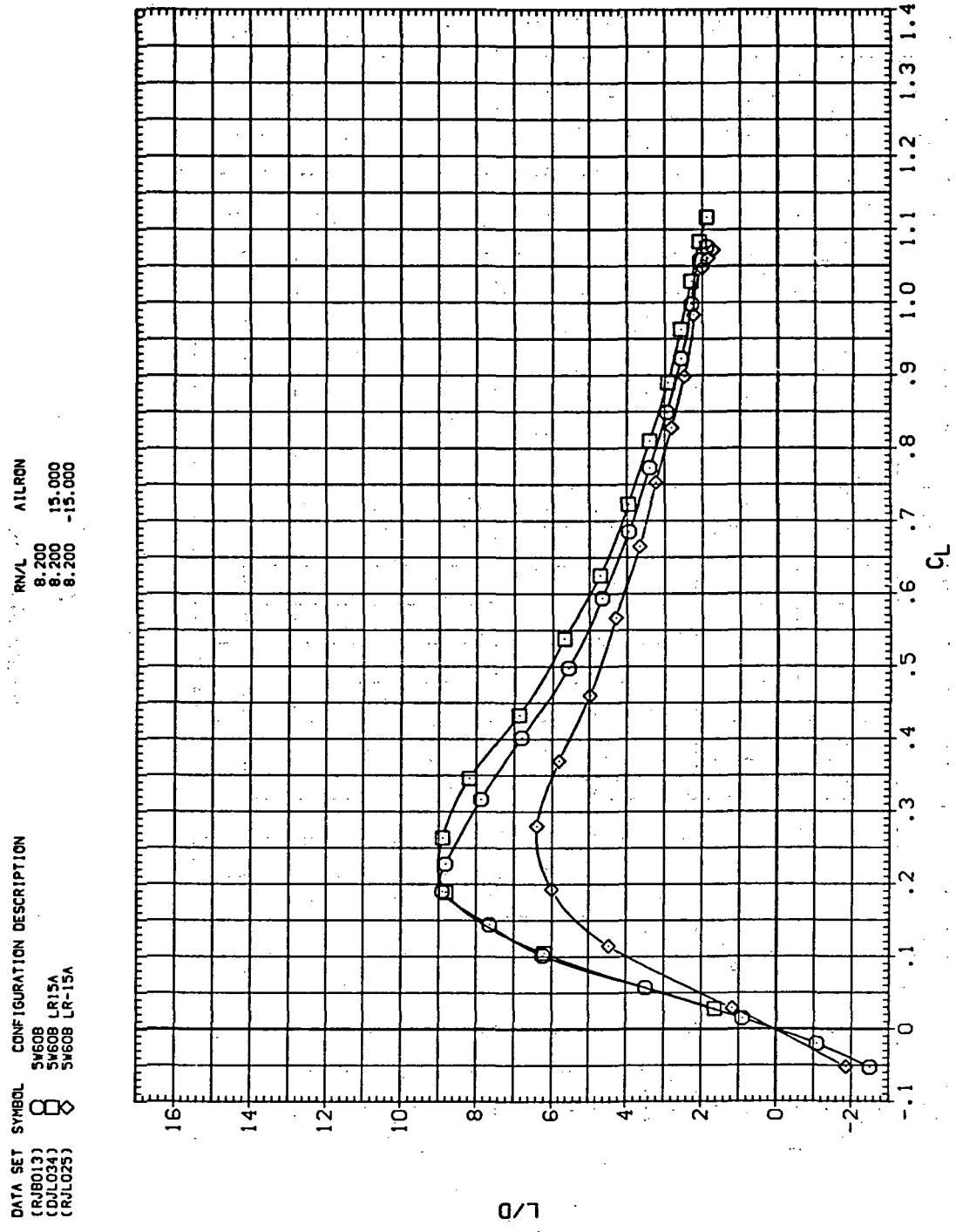


(b)  $C_D$  vs  $C_L$

Figure 44.— Continued.

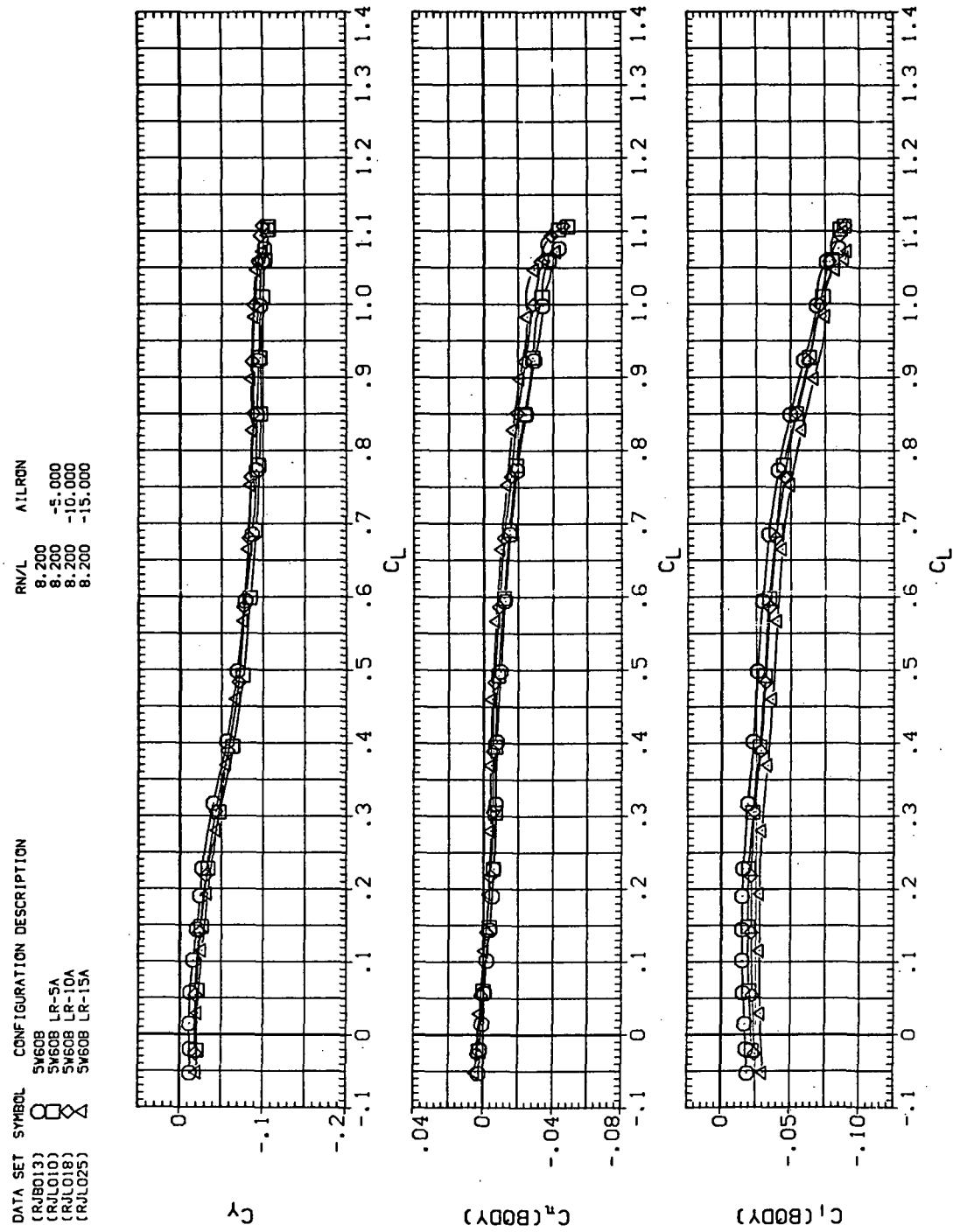


(c)  $C_L$  vs  $C_m$   
Figure 44.— Continued.



(d)  $L/D$  vs  $C_L$

Figure 44.—Continued.



(e)  $C_Y$ ,  $C_n$ , and  $C_1$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

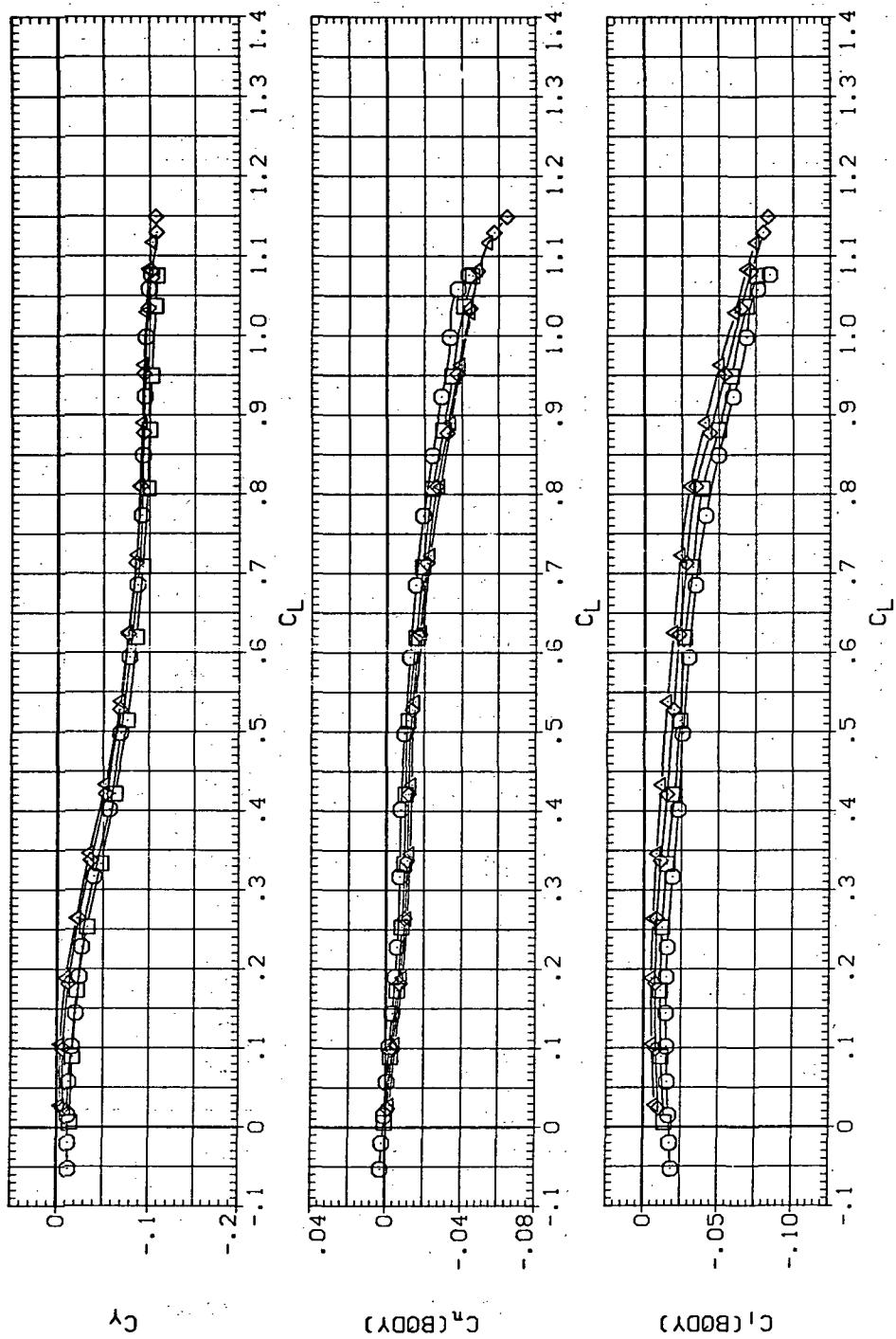
Figure 44.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RUB013)	$\square$	SW60B
(RLD011)	$\square$	SW60B LRSA
(RUL024)	$\diamond$	SW60B LR10A
(WUL034)	$\times$	SW60B LR15A

RN/L AILRON

8.200	5.000
8.200	10.000
8.200	15.000



(f)  $C_Y$ ,  $C_n$ , and  $C_l$  vs.  $C_L$  (positive  $\Delta\delta_a$ 's).

Figure 44.— Concluded.

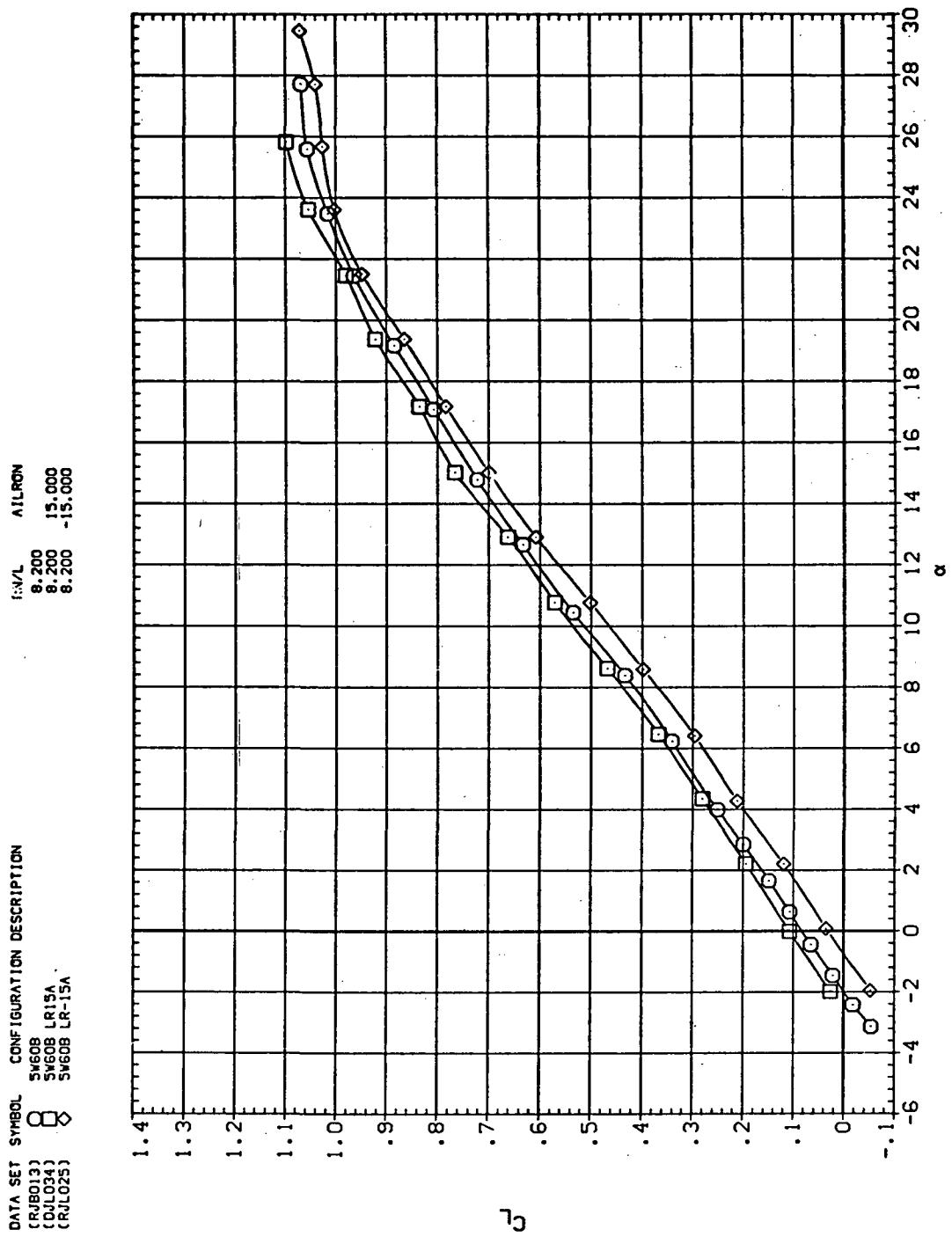
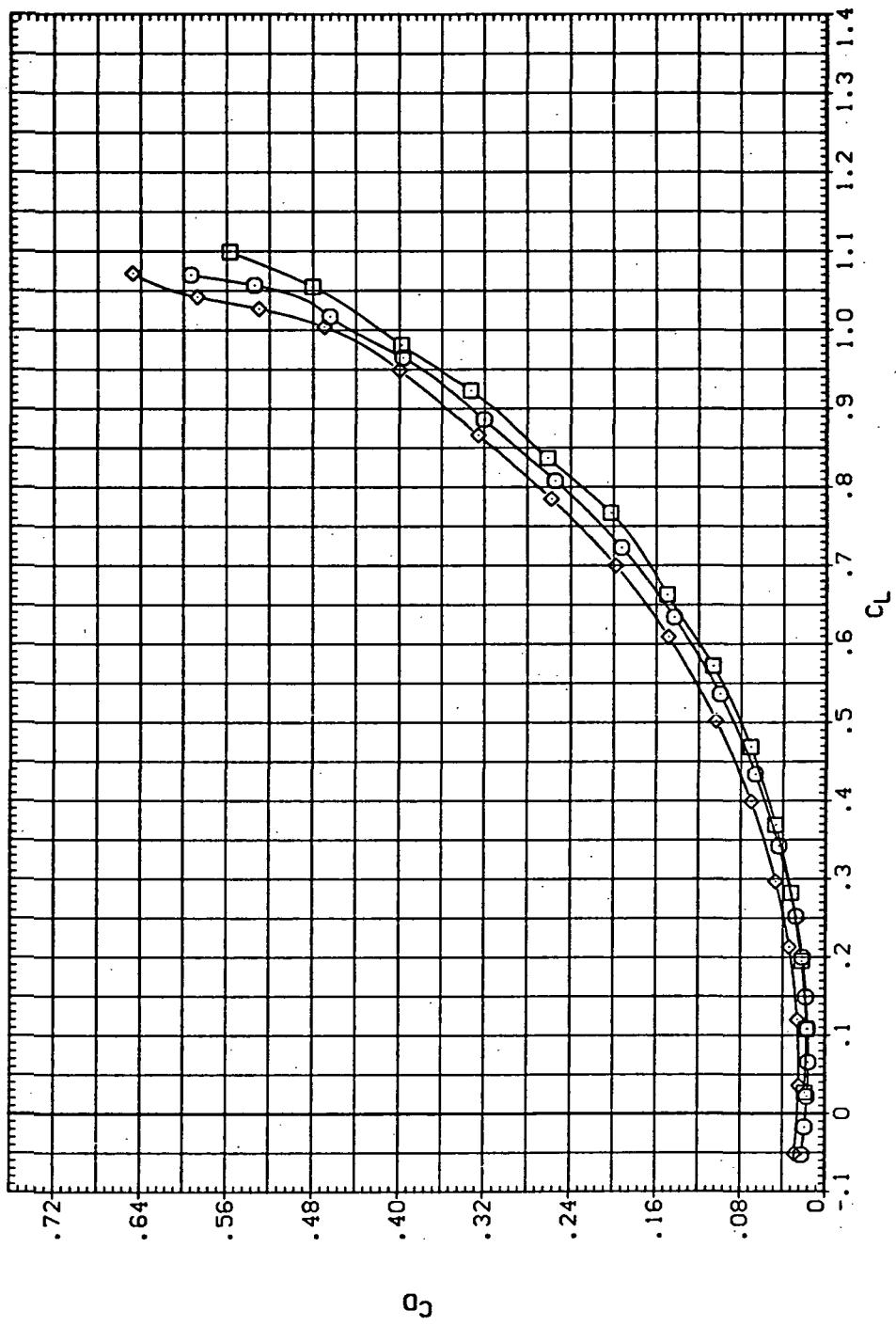


Figure 45.— Aileron effectiveness of the oblique wing with intermediate bend:  
 $\Lambda = 60^\circ, M = 0.60.$

DATA SET SYMBOL CONFIGURATION DESCRIPTION

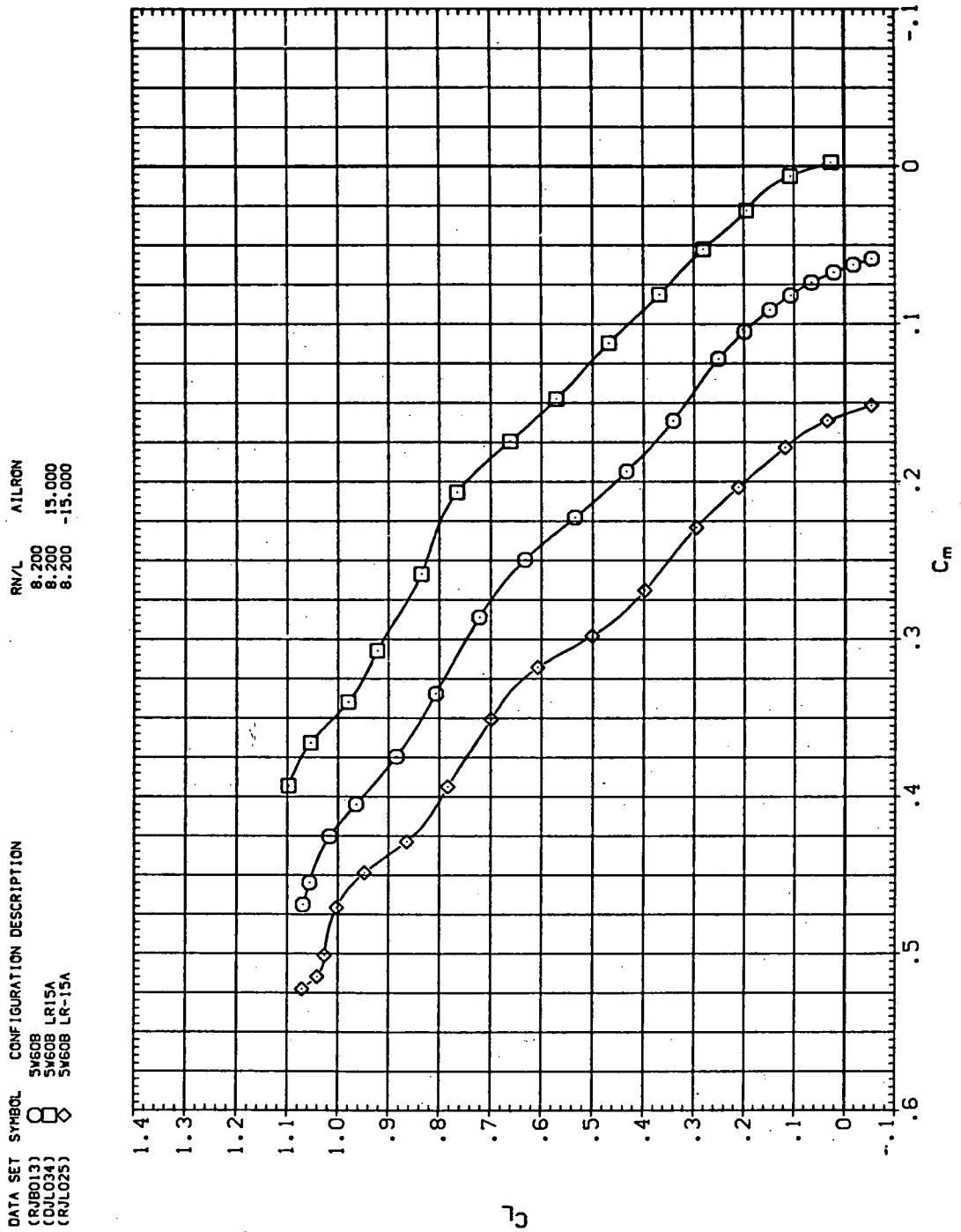
(RJL013)	○	SW608	AIRCON
(CWL034)	◇	SW608	8.200
(RJL025)	✖	SW608	15.000
		SW608	8.200
		SW608	-15.000

RN/L AIRCON  
8.200 15.000  
8.200 -15.000



(b)  $C_D$  vs  $C_L$

Figure 45.—Continued.



(c)  $C_L$  vs  $C_m$

Figure 45.— Continued.

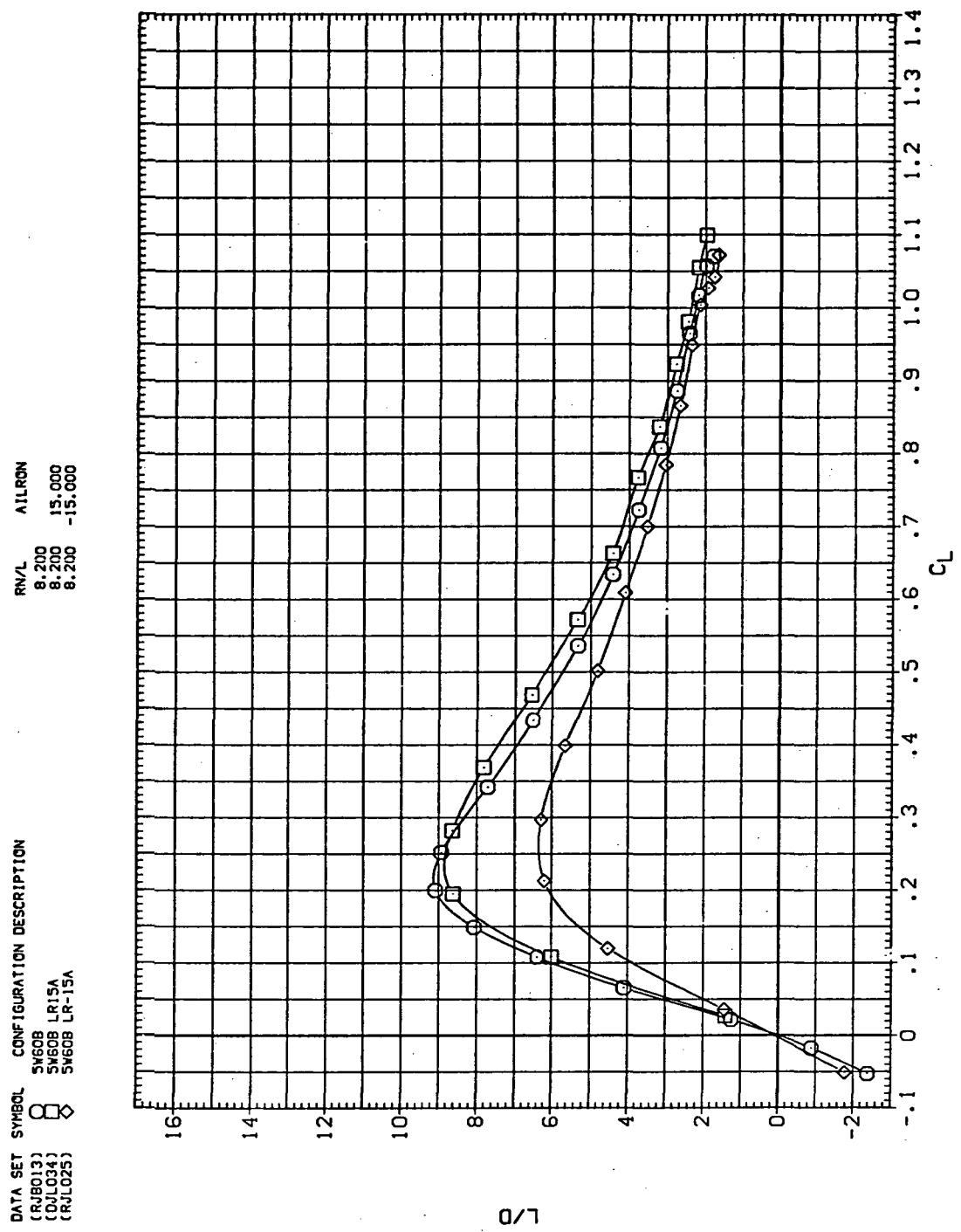
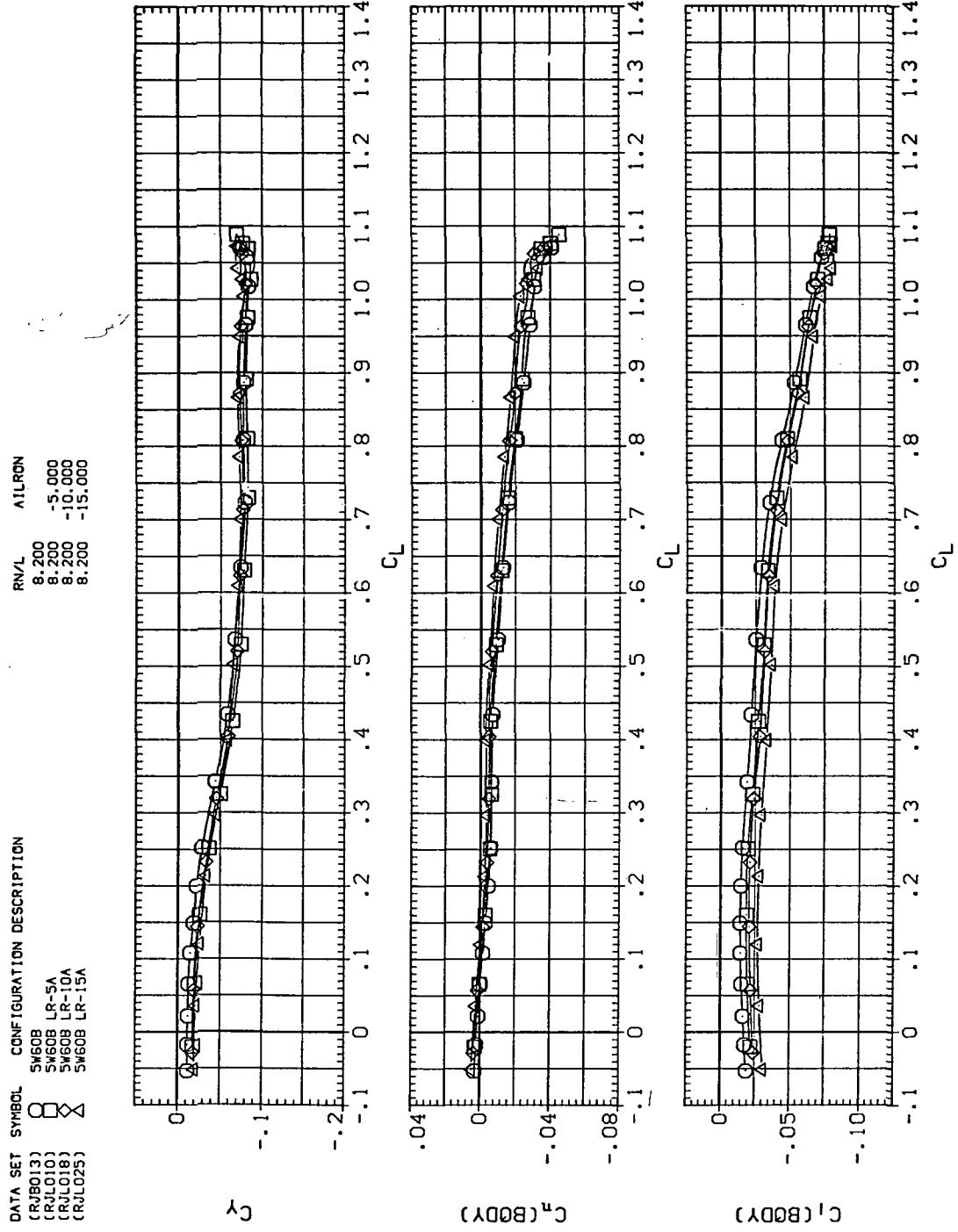


Figure 45.—Continued.

(d)  $L/D$  vs  $C_L$



(e)  $C_Y$ ,  $C_n$ , and  $C_L$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

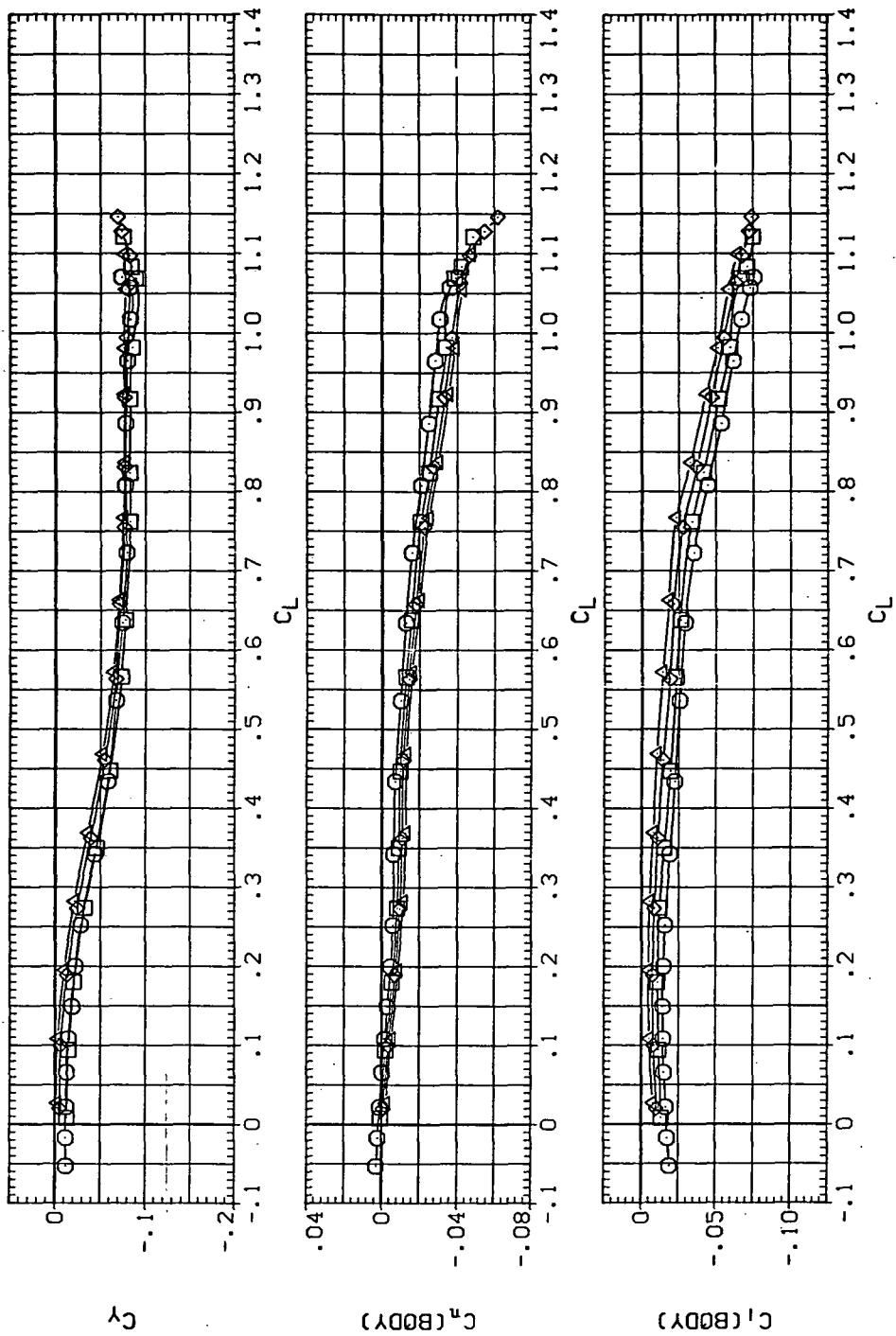
Figure 45.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RIB013)	$\circ$	SWOB
(RAL011)	$\square$	SWOB LRSA
(RAL024)	$\diamond$	SWOB LR10A
(DYL034)	$\triangle$	SWOB LR15A

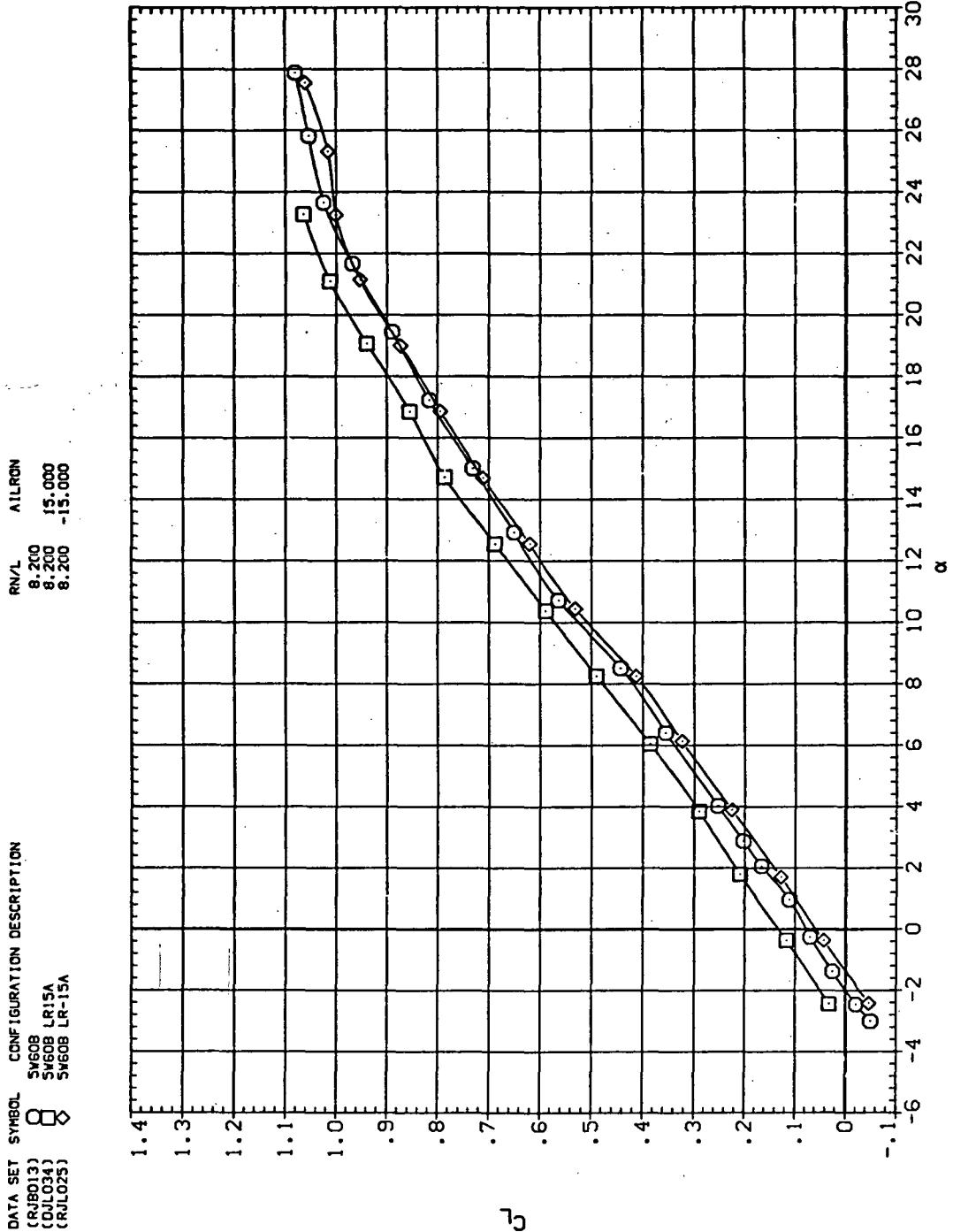
RN/L AILRON

8.200	8.200
5.000	5.000
8.200	10.000
8.200	15.000



(f)  $C_Y$ ,  $C_n$ , and  $C_I$  vs  $C_L$  (positive  $\Delta\delta_a$ 's).

Figure 45.— Concluded.



(a)  $C_L$  vs  $\alpha$

Figure 46.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 60^\circ, M = 0.90.$

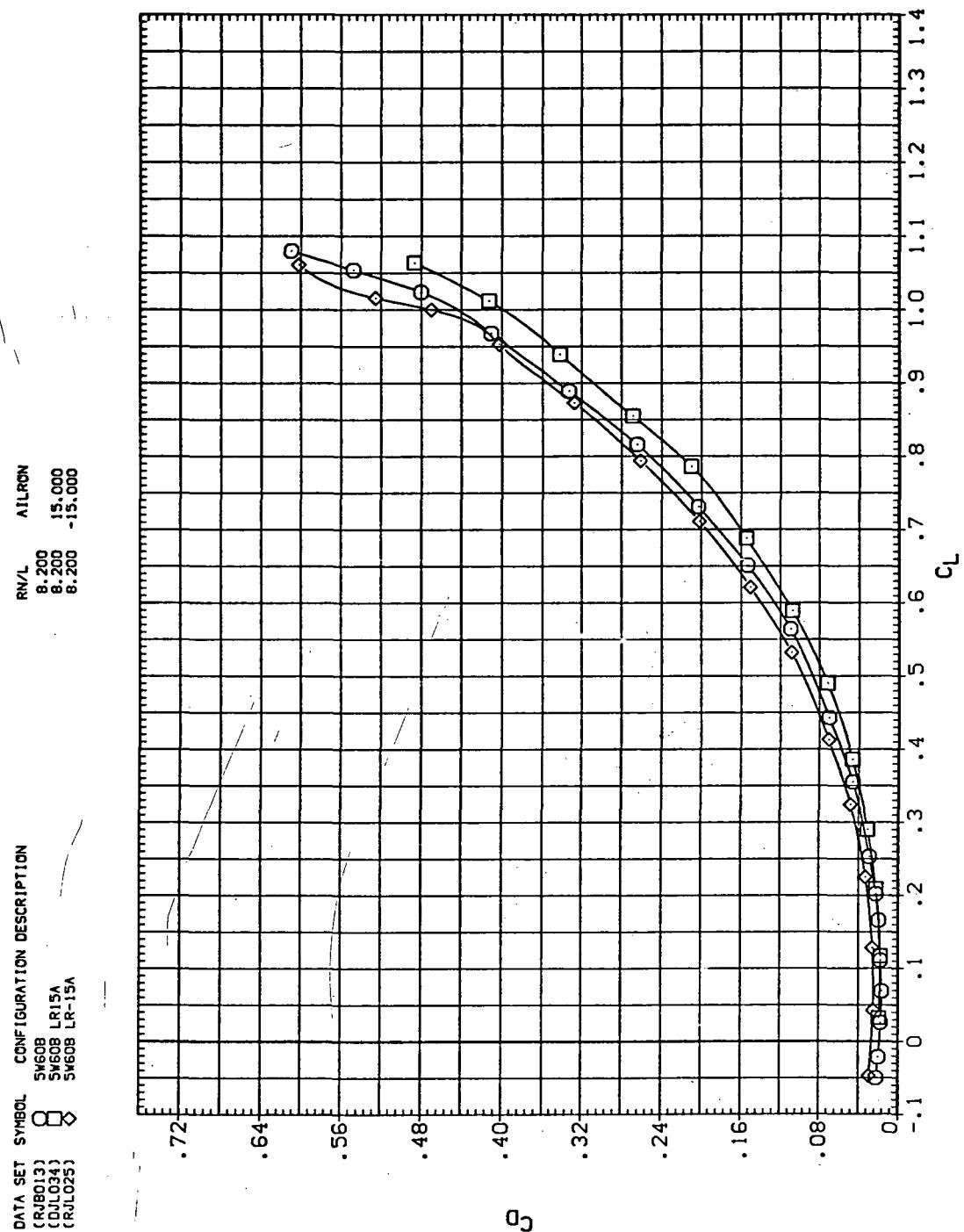
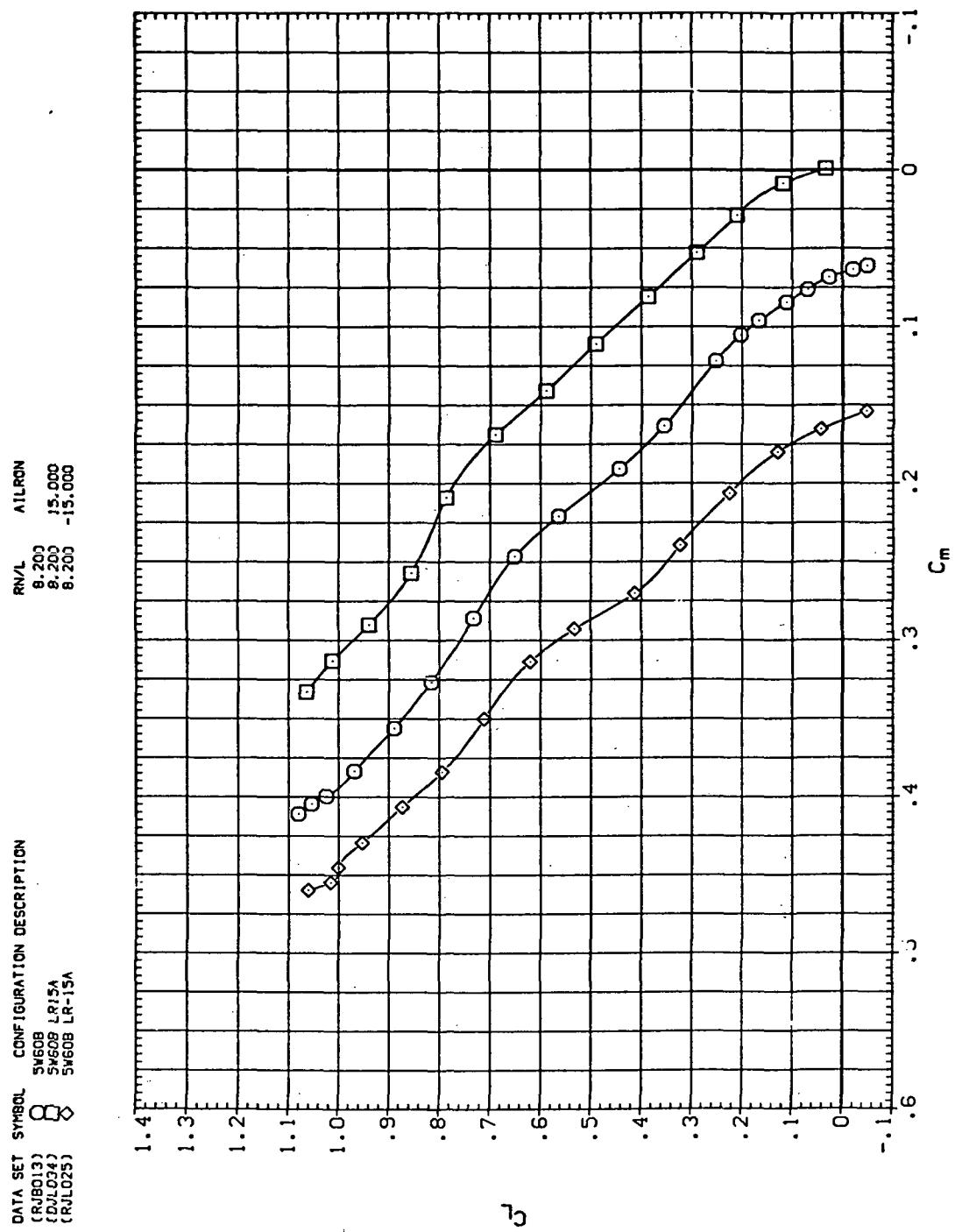
(b)  $C_D$  vs  $C_L$ 

Figure 46.—Continued.

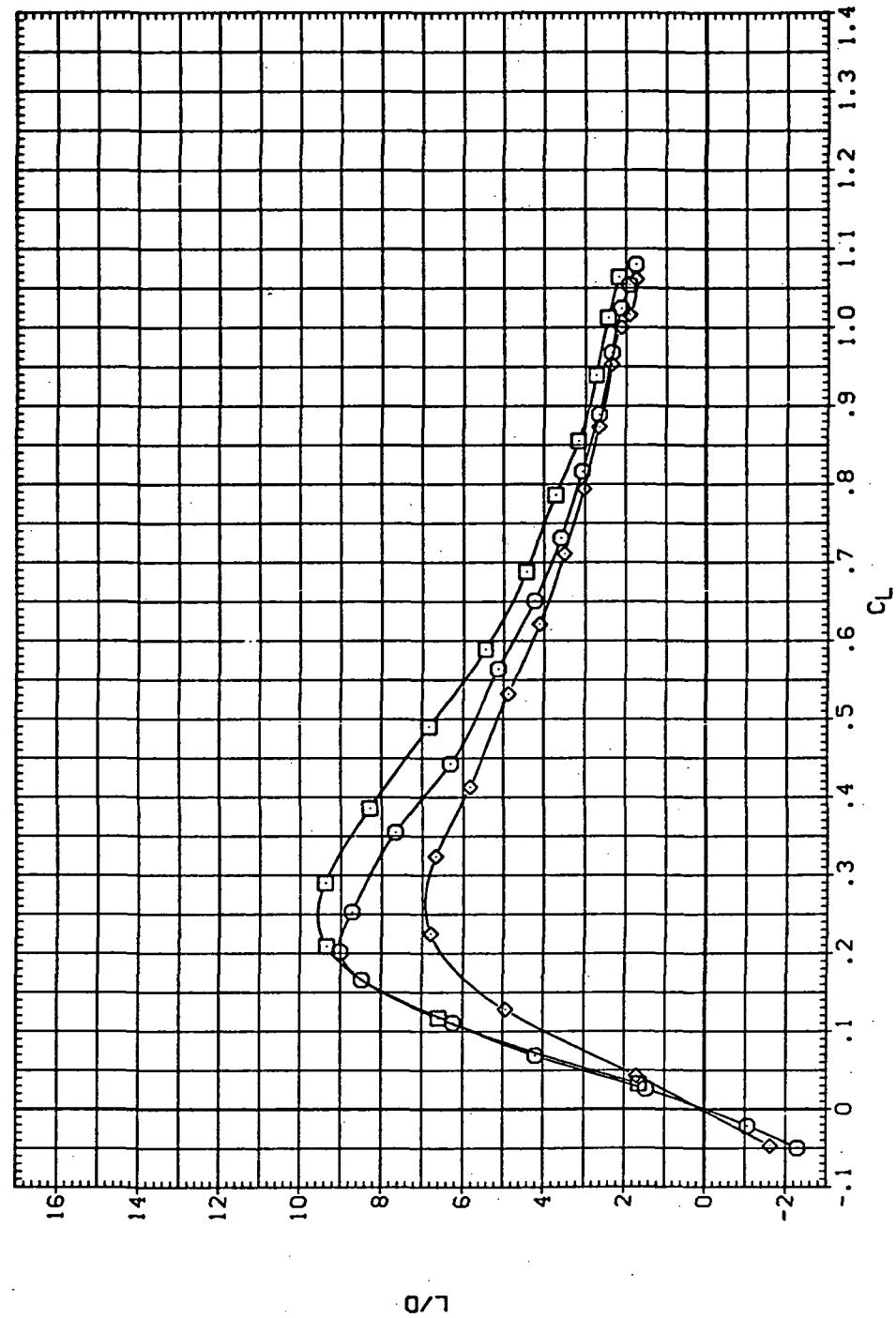


(c)  $C_L$  vs  $C_m$

Figure 46.—Continued.

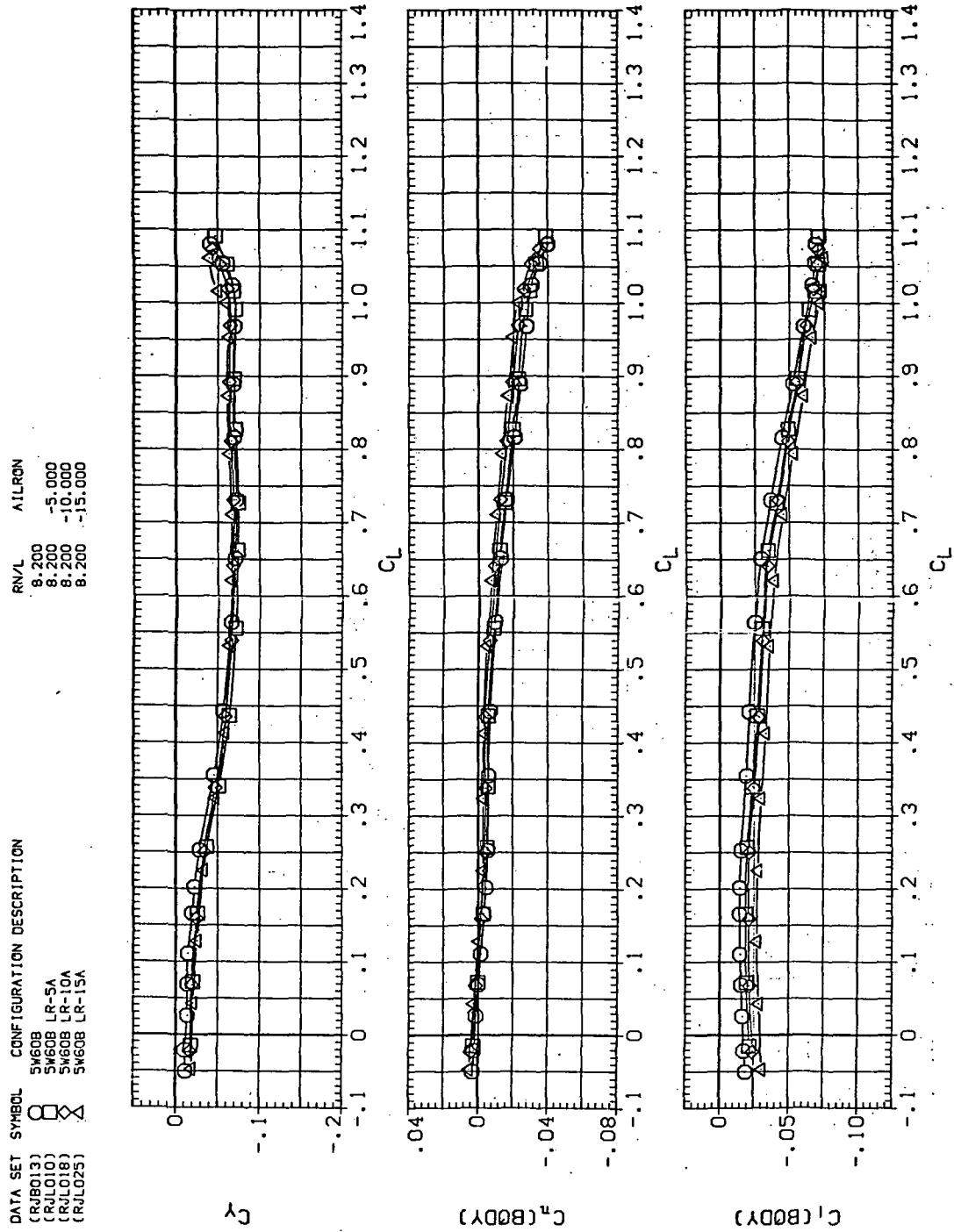
DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (RJBD013)  $\diamond$  SW60B  
 (QDLO34)  $\square$  SW60B LRISA  
 (RJL025)  $\circ$  SW60B LR-15A

RN/L AILRON  
 8.200 15.000  
 8.200 -15.000  
 8.200



(d)  $L/D$  vs  $C_L$

Figure 46.— Continued.

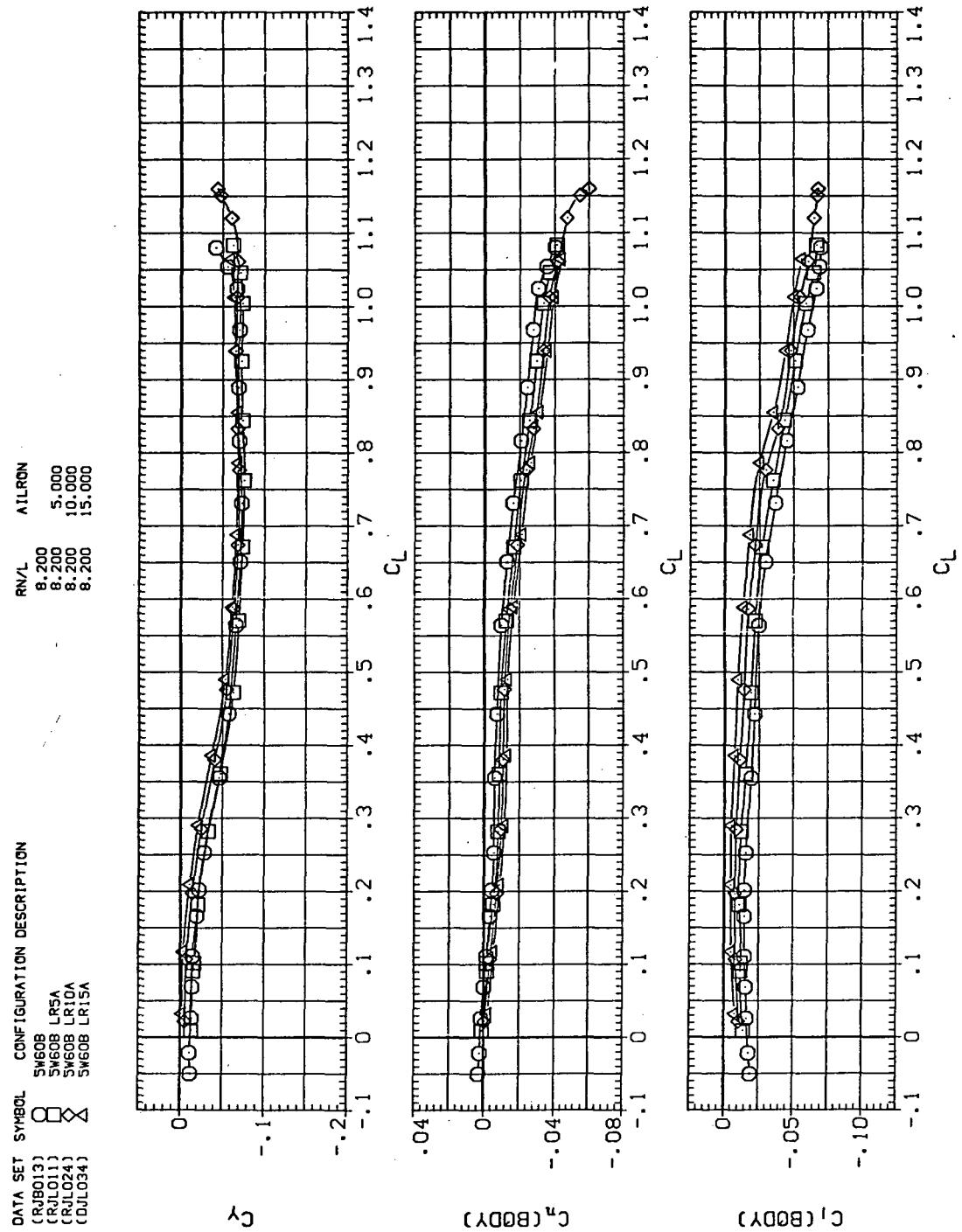


(e)  $C_Y$ ,  $C_n$ , and  $C_I$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

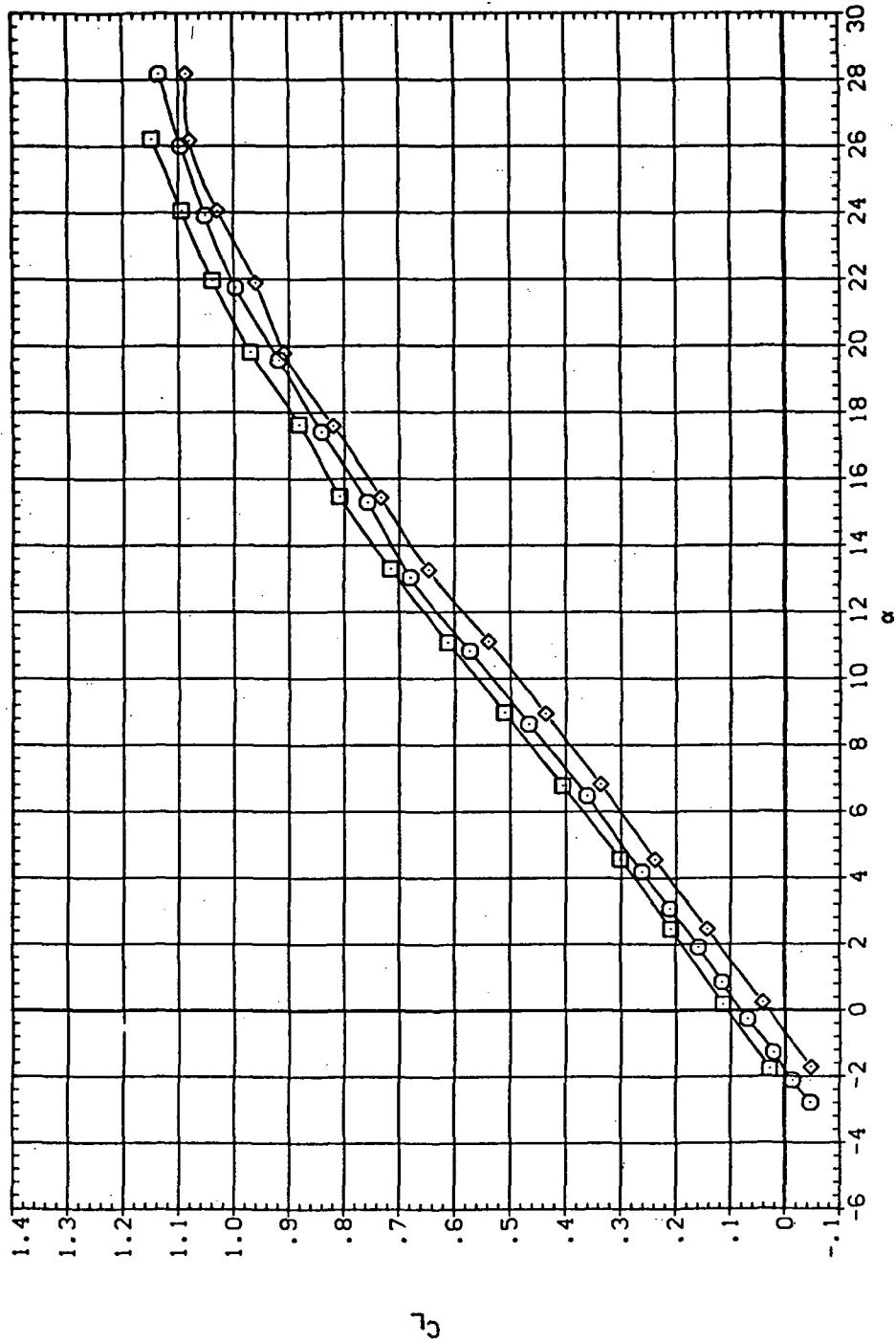
Figure 46.—Continued.

Figure 46.— Concluded.

(f)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (positive  $\Delta\delta_a$ 's).



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(RIB013)		SW608 LR15A
{DOL034}		SW608 LR-15A
(RJL025)		

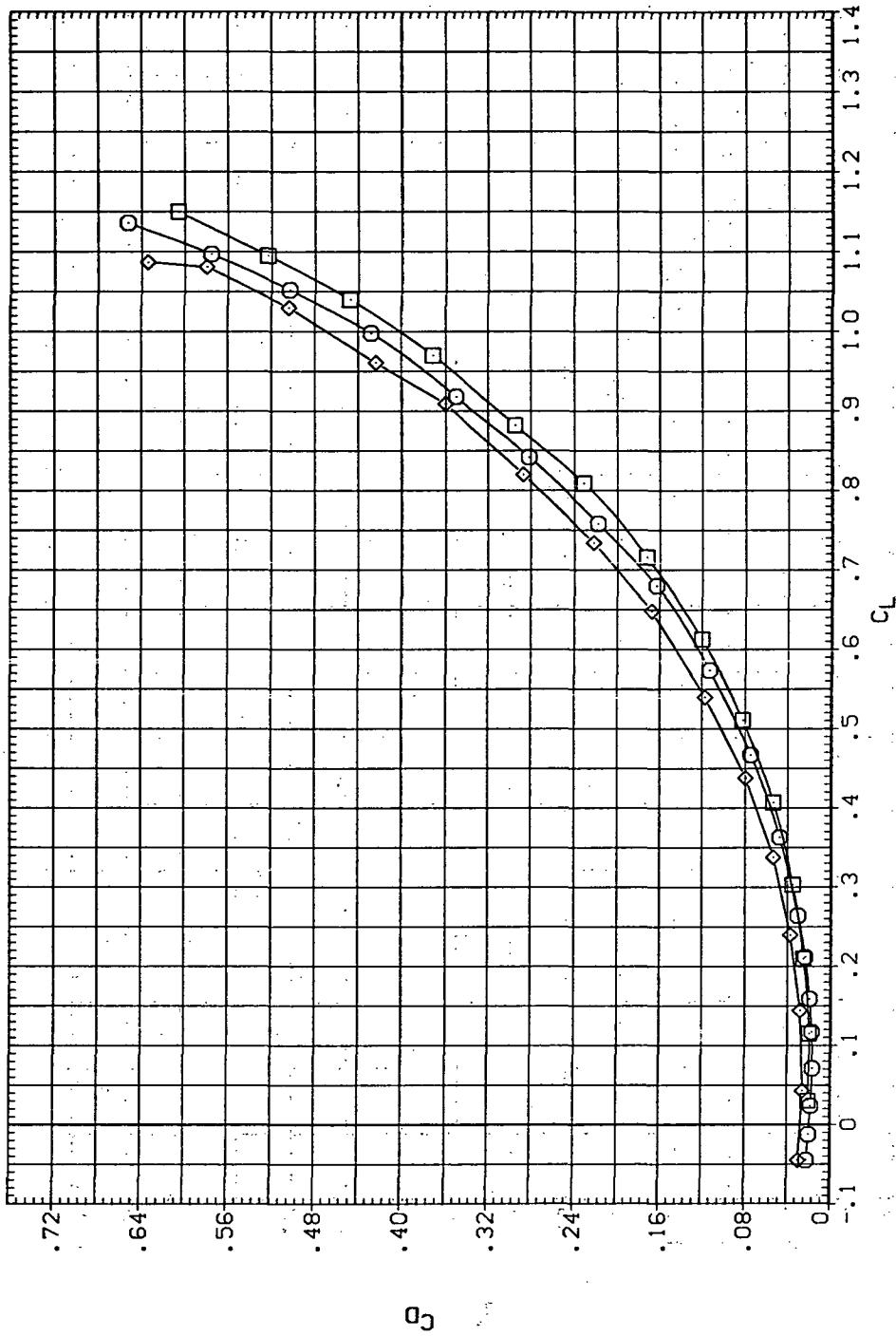


(a)  $C_L$  vs  $\alpha$

Figure 47.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 60^\circ, M = 0.95$ .

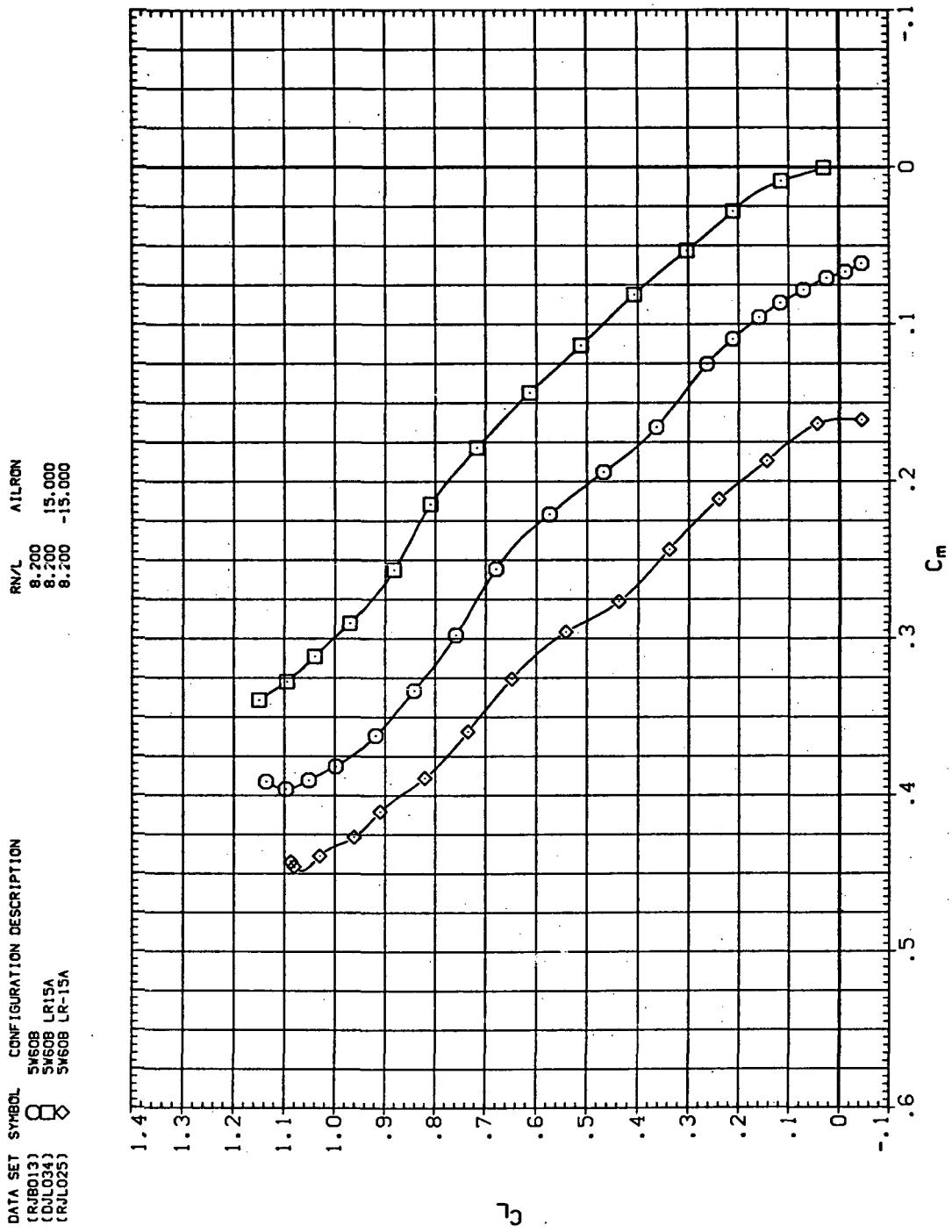
DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (RU013) ○ SW60B  
 (DU034) □ SW60B LR15A  
 (RU025) ◇ SW60B LR-15A

RN/L AILRON  
 8.200 15,000  
 8.200 -15,000  
 8.200



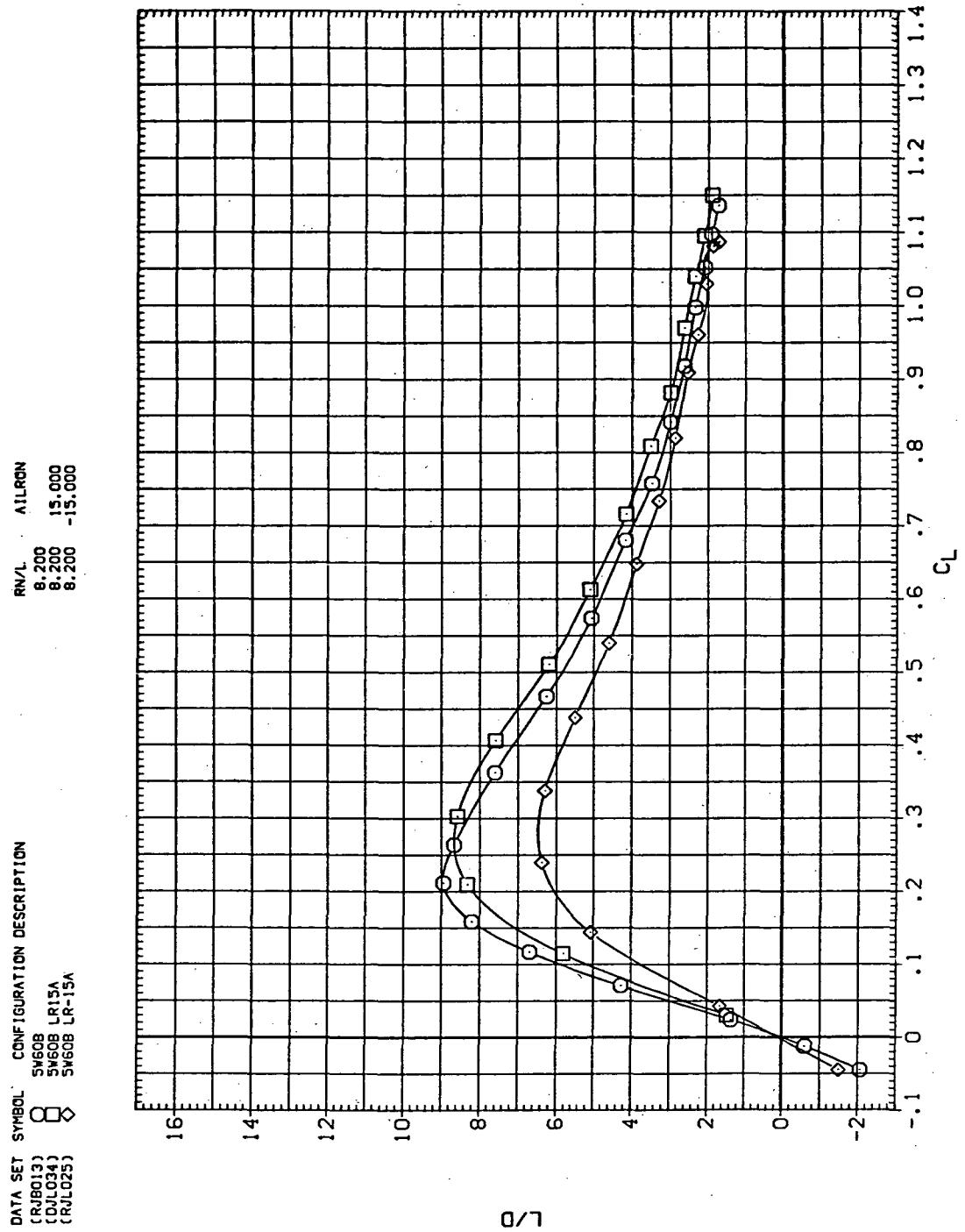
(b)  $C_D$  vs  $C_L$

Figure 47.—Continued.



(c)  $C_L$  vs  $C_m$

Figure 47.—Continued.

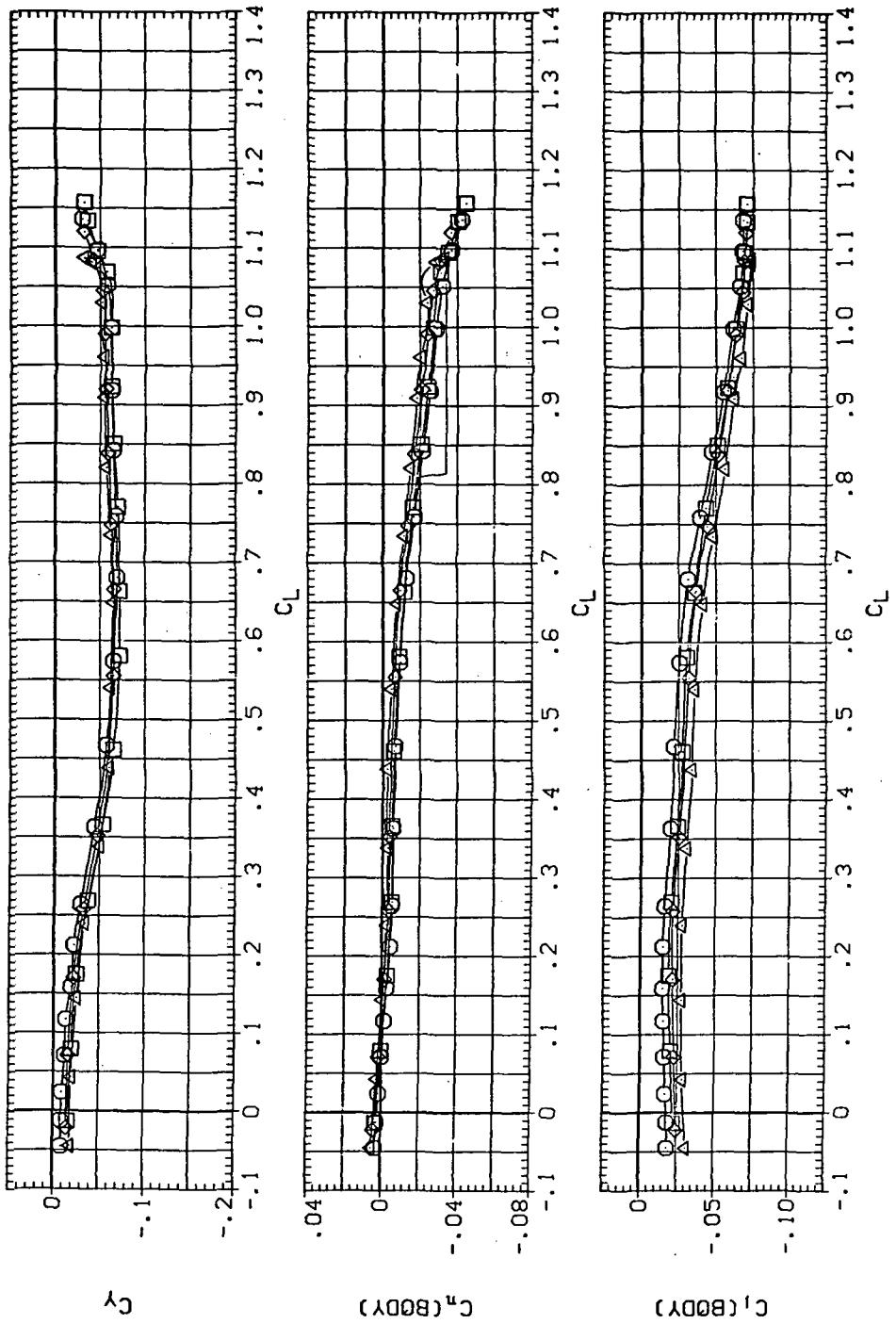


(d)  $L/D$  vs  $C_L$

Figure 47.— Continued.

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(CRJBL13)	○	SW608
(RJL010)	□	SW608 LR-5A
(RJL018)	△	SW608 LR-10A
(RJL025)	×	SW608 LR-15A

AIRCON	RNL
8.200	-5.000
8.200	-10.000
8.200	-15.000

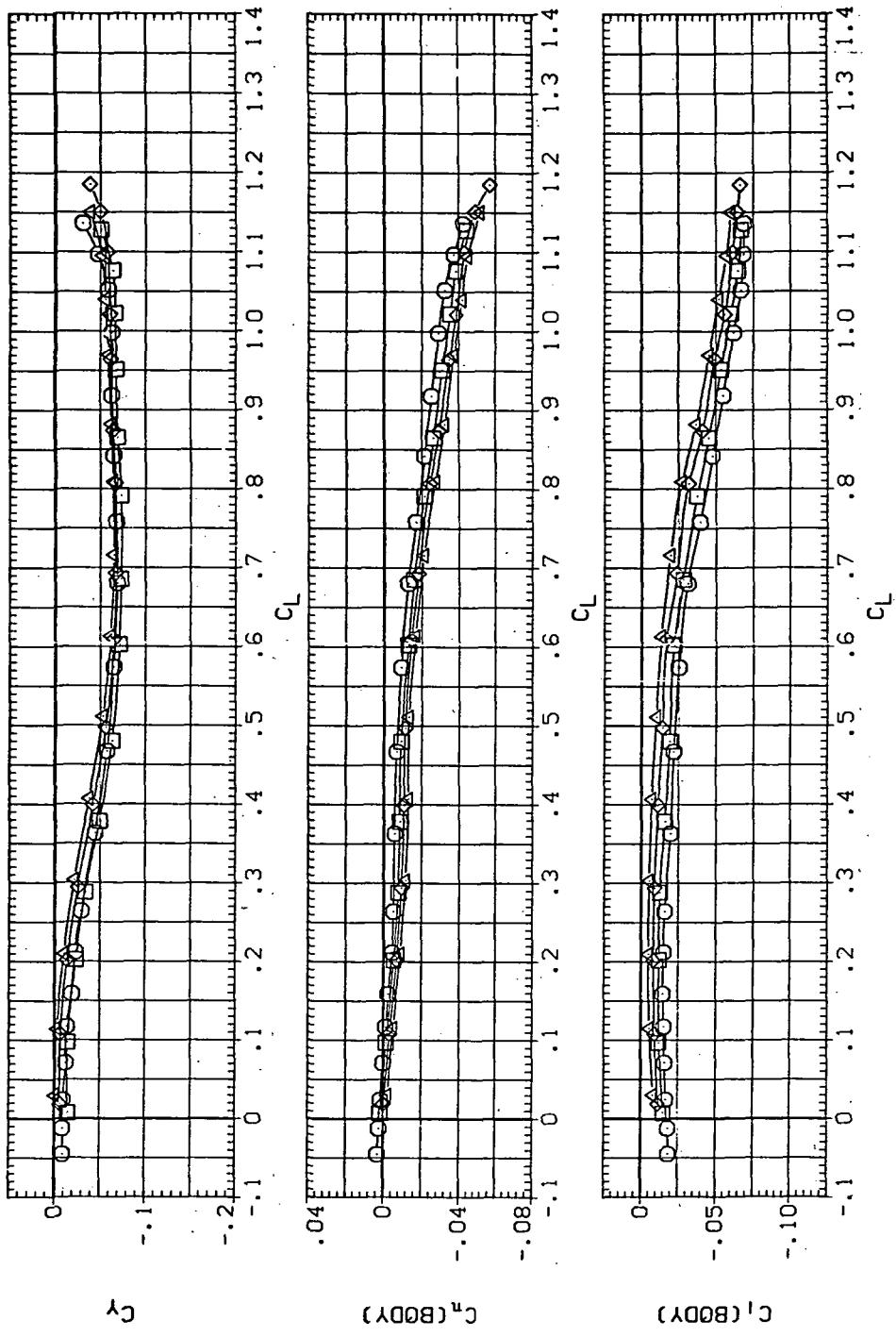


(e)  $C_Y$ ,  $C_n$ , and  $C_I$  vs  $C_L$  (negative  $\Delta\delta_d$ 's).

Figure 47.—Continued.

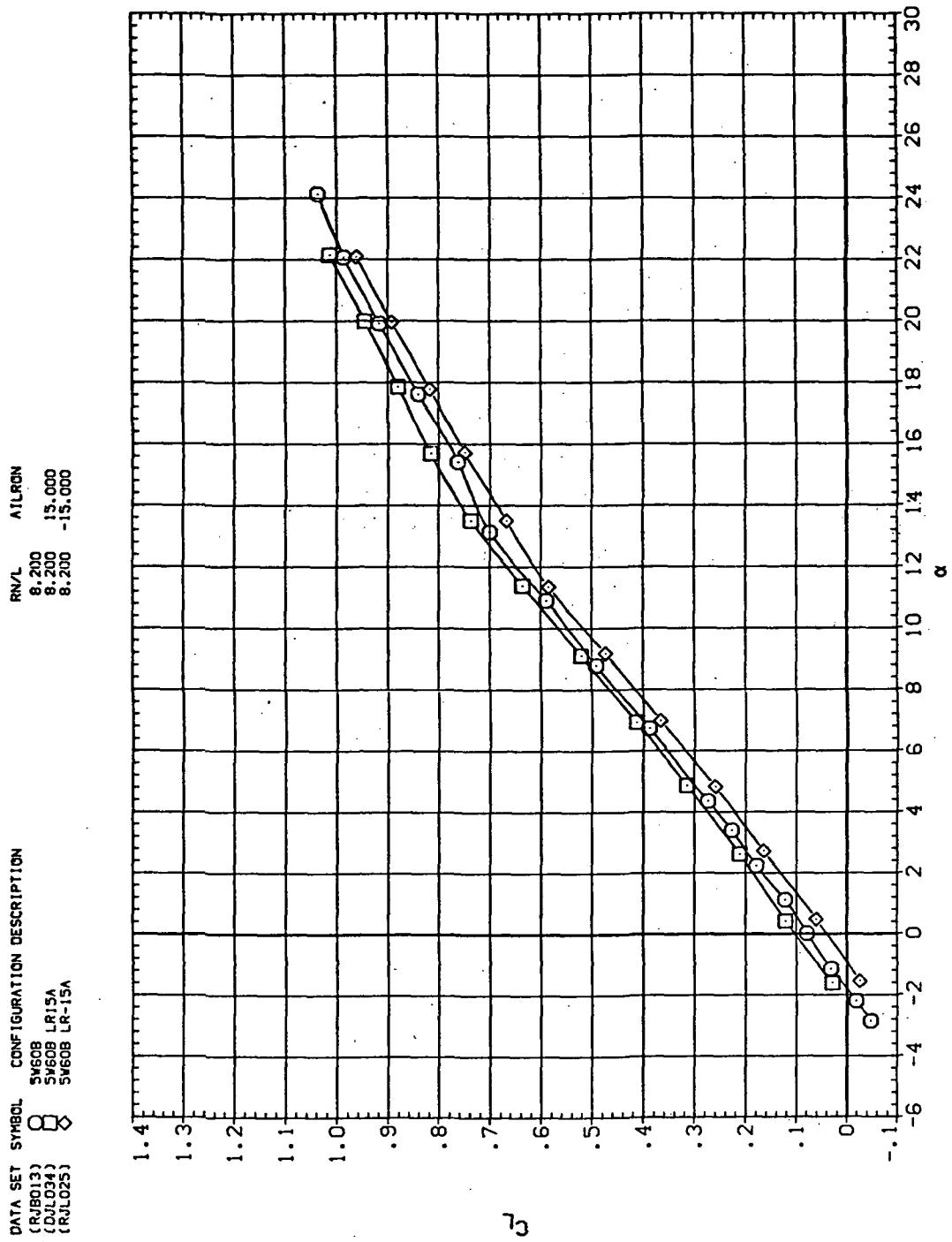
DATA SET SYMBOL CONFIGURATION DESCRIPTION

[RJB013]	$\square$	SW60B	RNL	AIRON
[RJL011]	$\square$	SW60B	LROA	8.200 5.000
[RJL024]	$\diamond$	SW60B	LR10A	8.200 10.000
[DJL034]	$\triangle$	SW60B	LR15A	8.200 15.000



(f)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (positive  $\Delta\delta_a$ 's).

Figure 47.— Concluded.



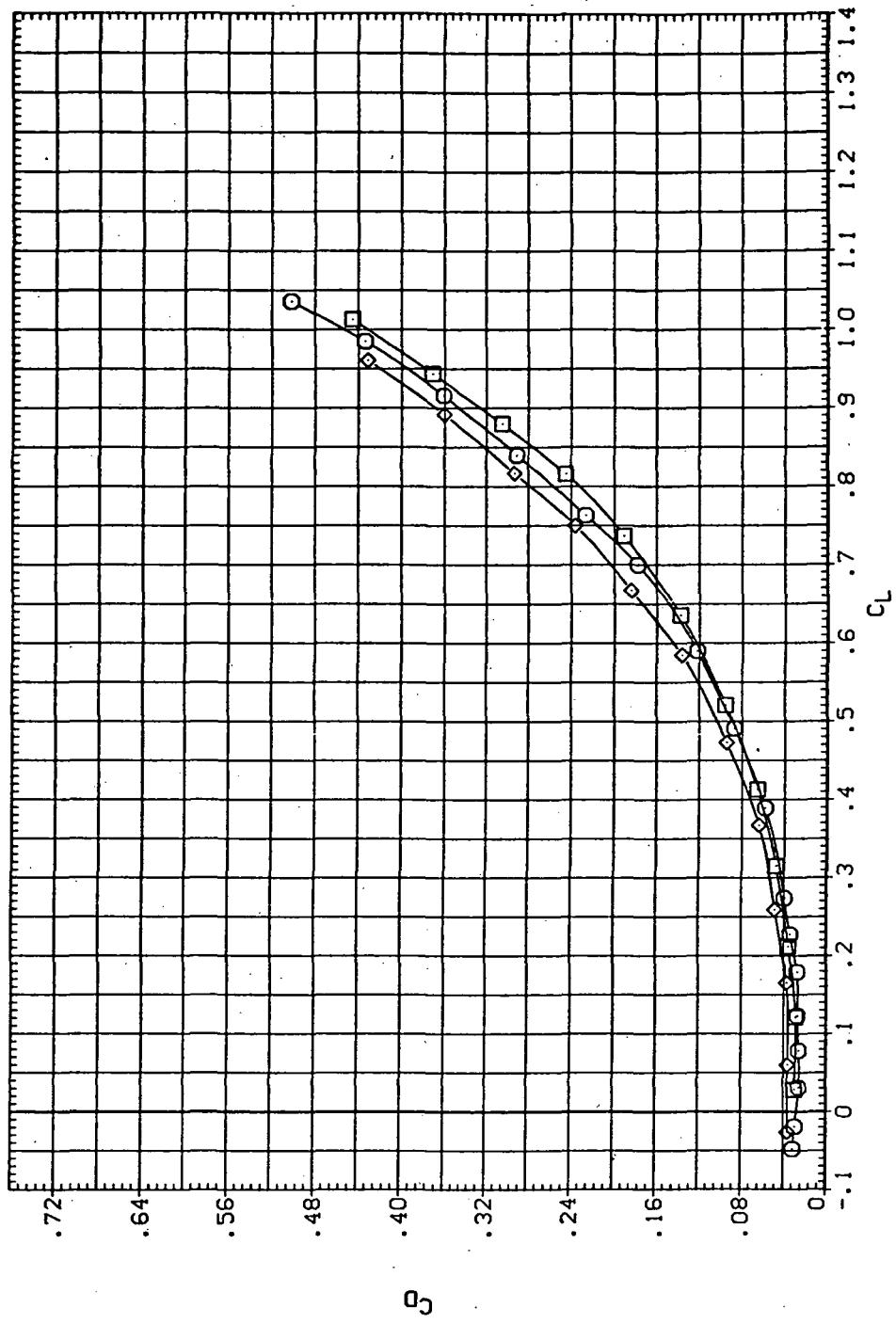
(a)  $C_L$  vs  $\alpha$

Figure 48.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 60^\circ, M = 1.1.$

DATA SET SYMBOL CONFIGURATION DESCRIPTION

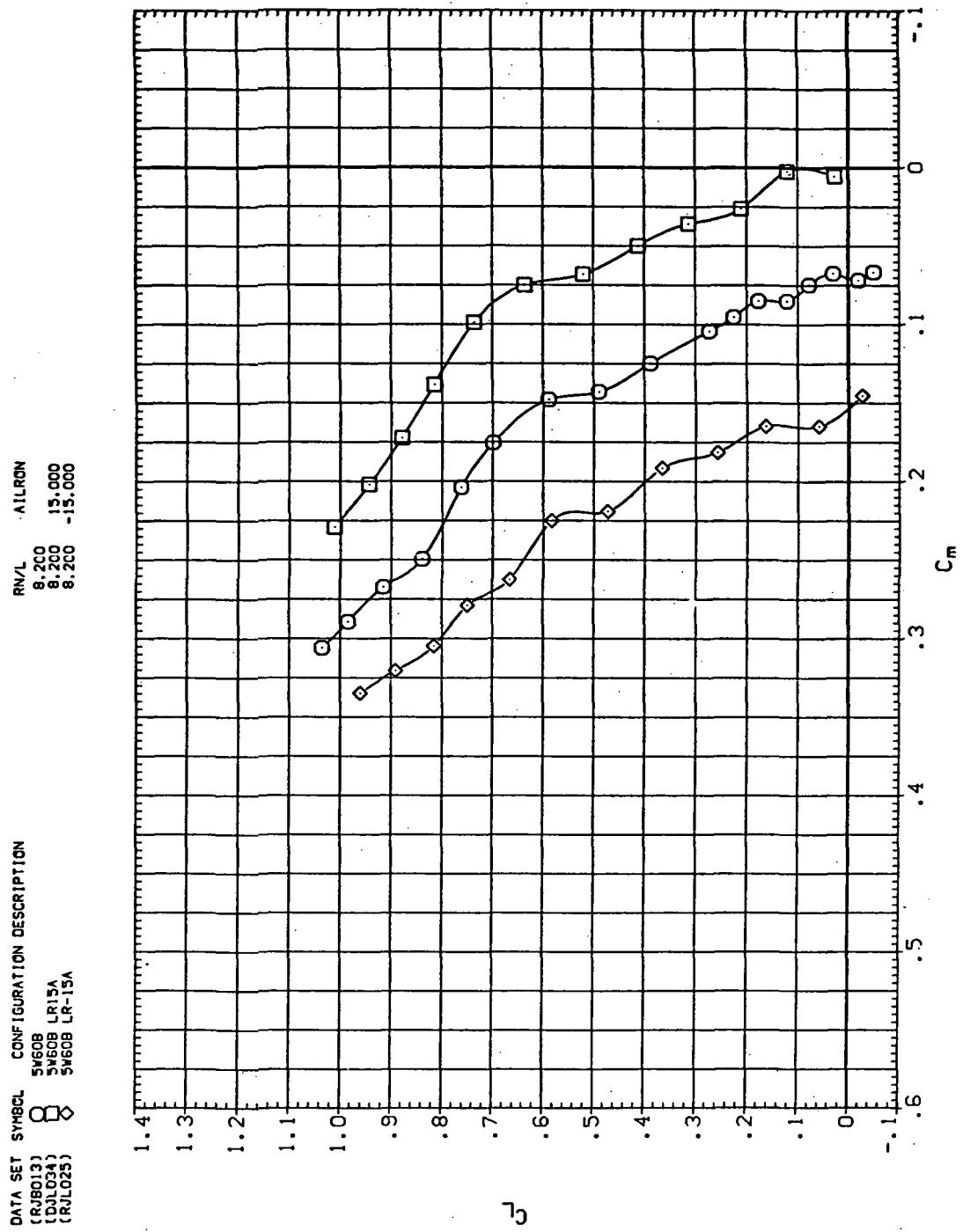
(RJ8013)	○	SW608	AIRRON
(UL004)	□	SW608	8.200 15.000
(UL005)	◊	SW608	8.200 -15.000

R/V/L AIRRON  
8.200 15.000  
8.200 -15.000



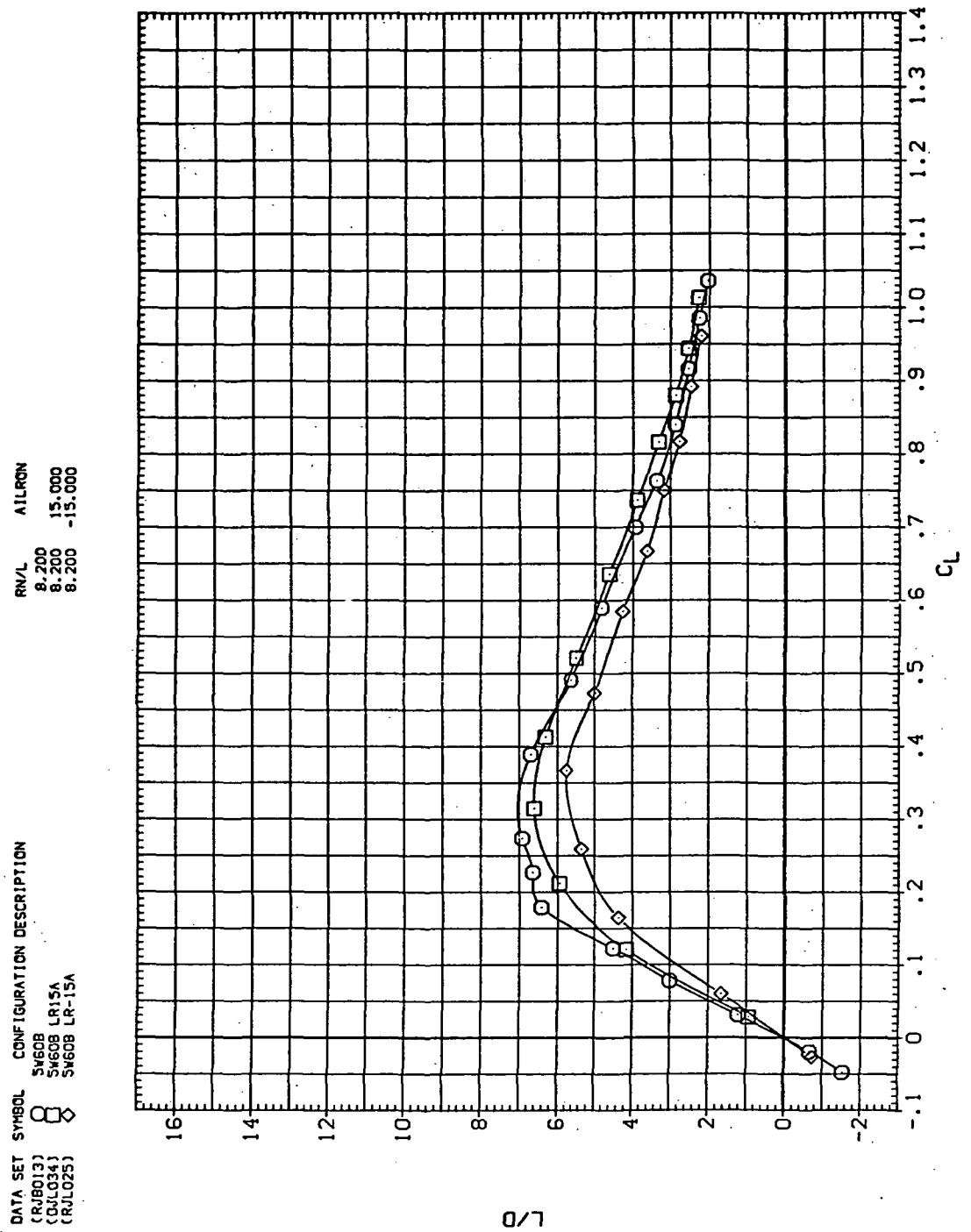
(b)  $C_D$  vs  $C_L$

Figure 48.—Continued.



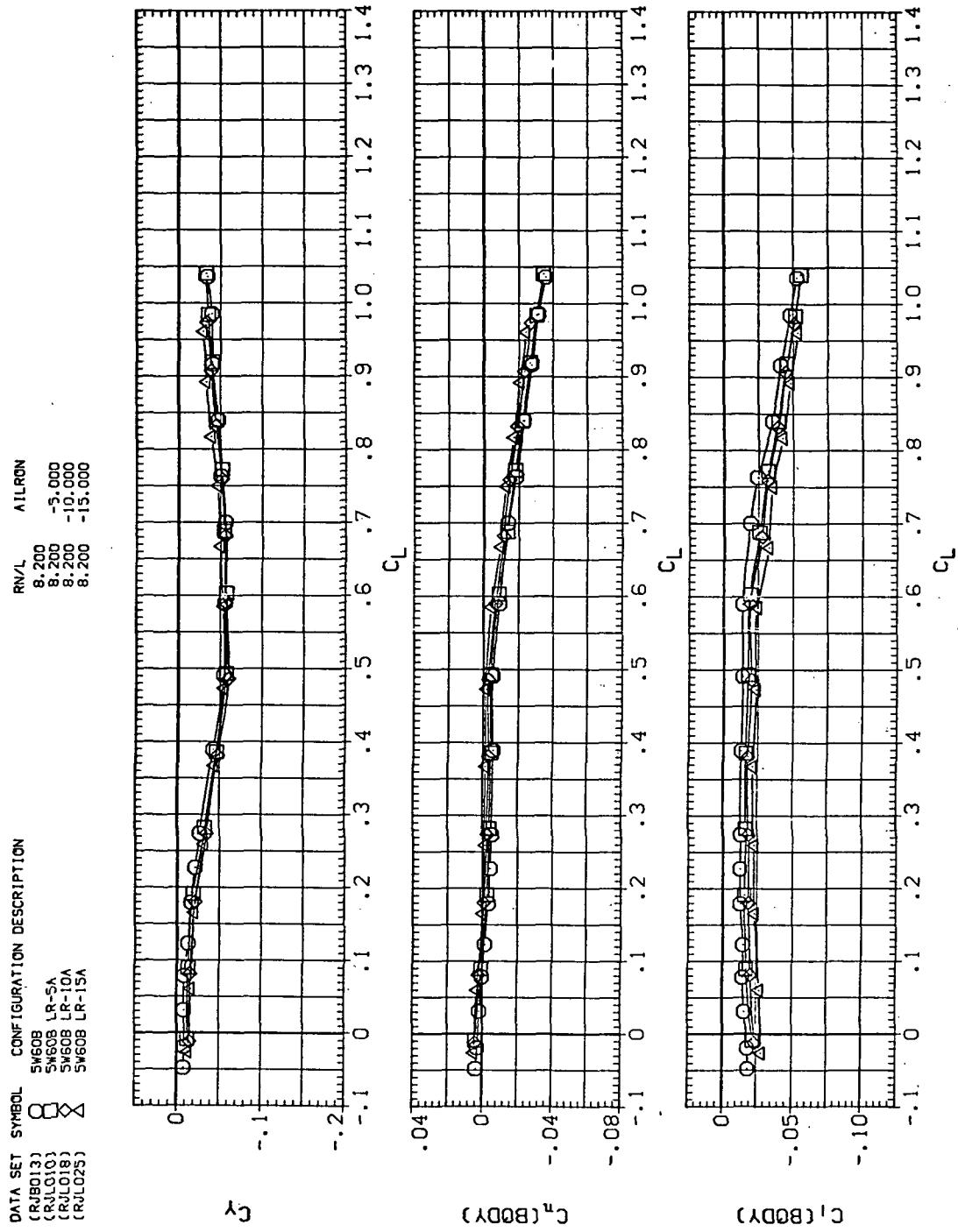
(c)  $C_L$  vs  $C_m$

Figure 48.—Continued



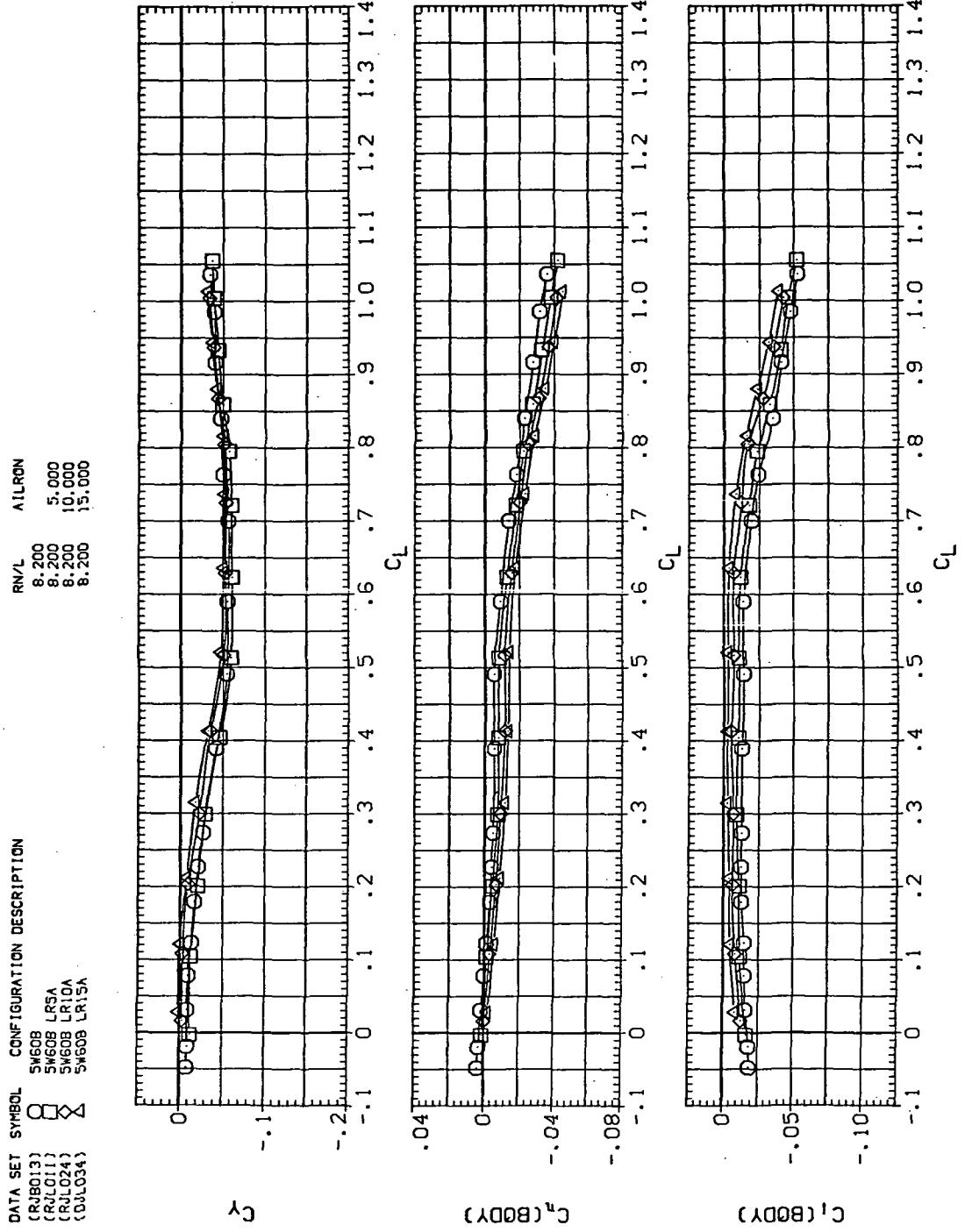
(d)  $L/D$  vs  $C_L$

Figure 48.—Continued.



(e)  $C_n$ ,  $C_y$ , and  $C_l$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

Figure 48.—Continued.



(f)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (positive  $\Delta\delta_a$ 's).

Figure 48.— Concluded.

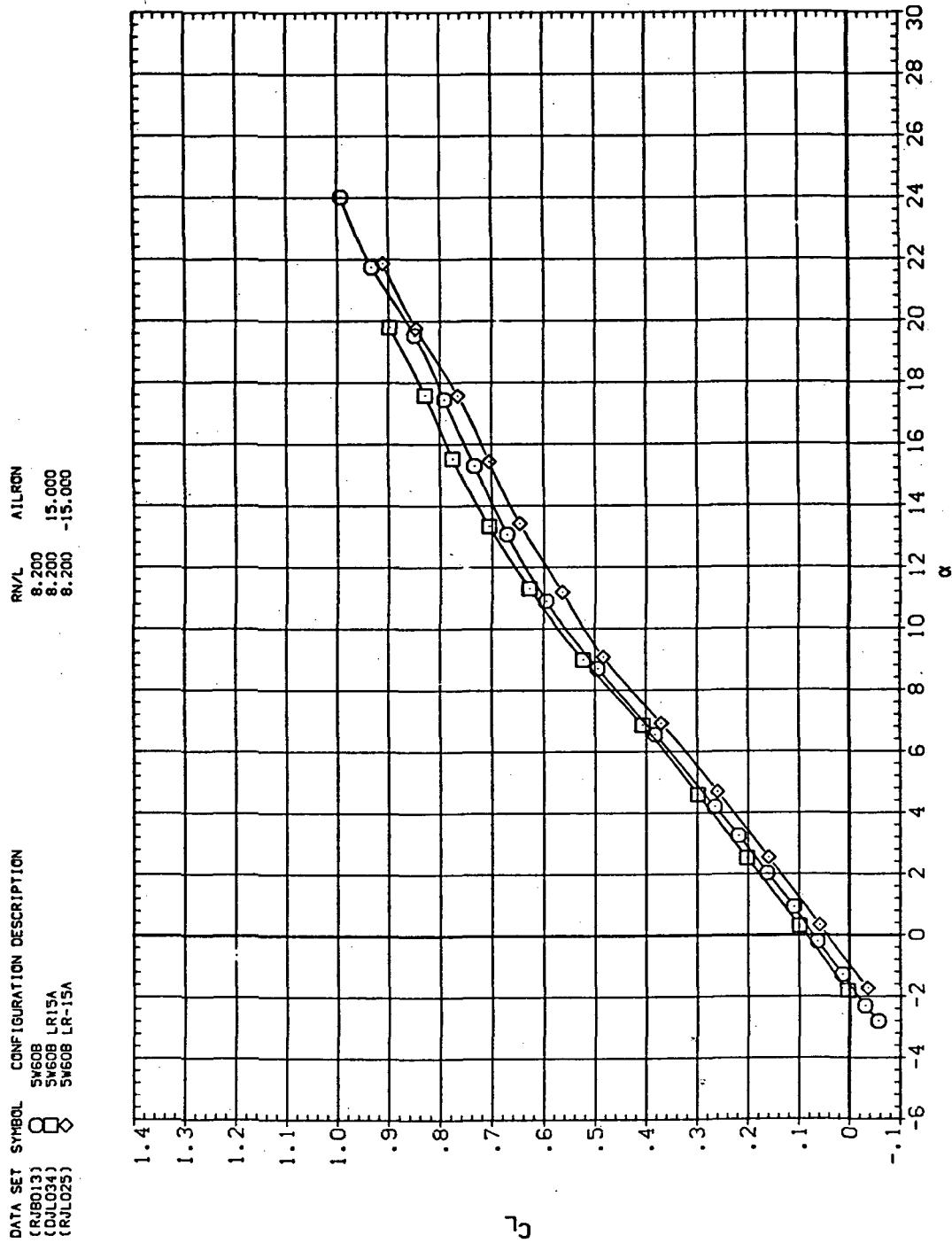
(a)  $C_L$  vs  $\alpha$ 

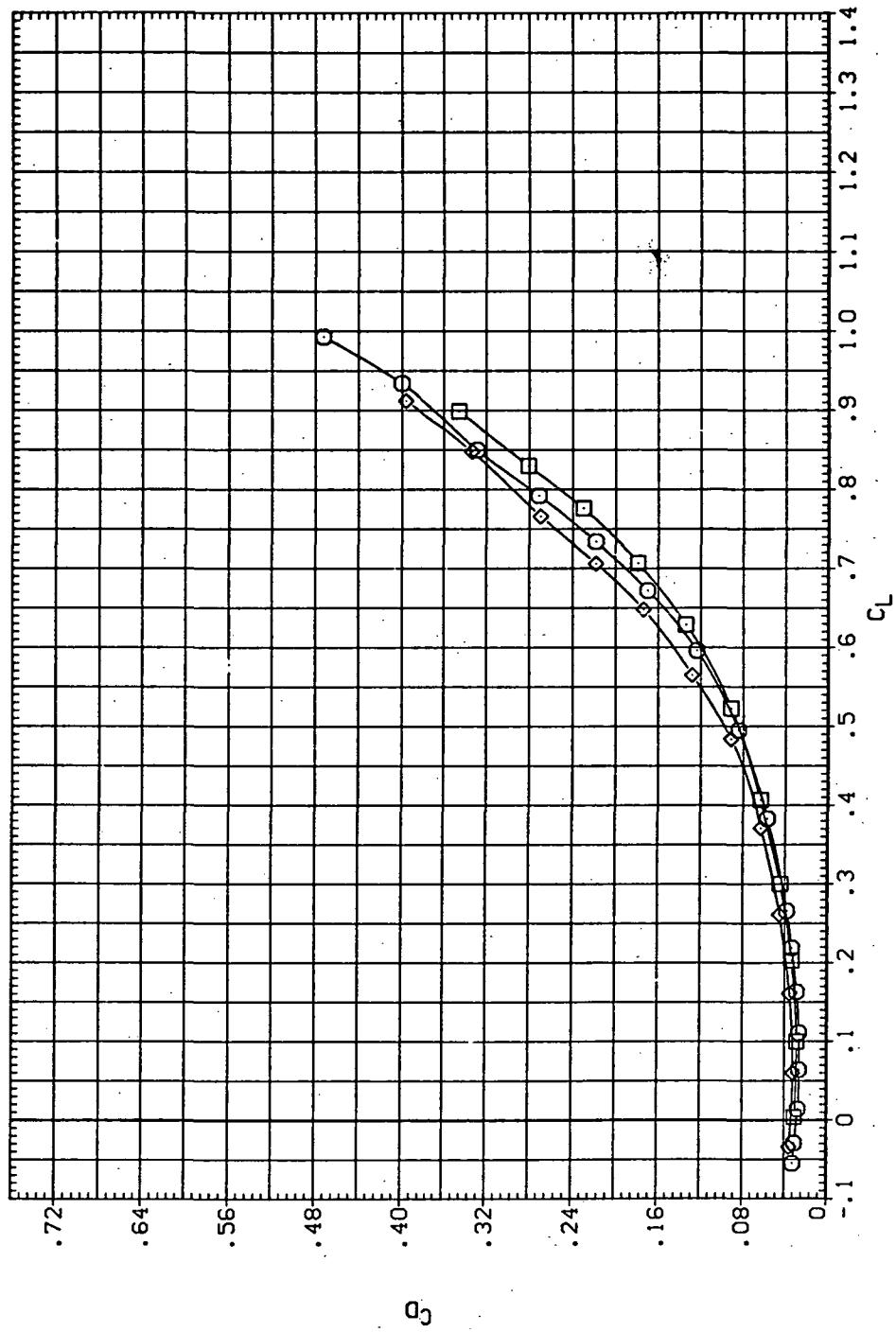
Figure 49.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 60^\circ, M = 1.20.$

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RJB013)	○	SW608	AIRRON
(DJL034)	□	SW608	8.200
(RJL025)	◇	SW608	8.200
		LR-15A	15,000
		SR-15A	-15,000

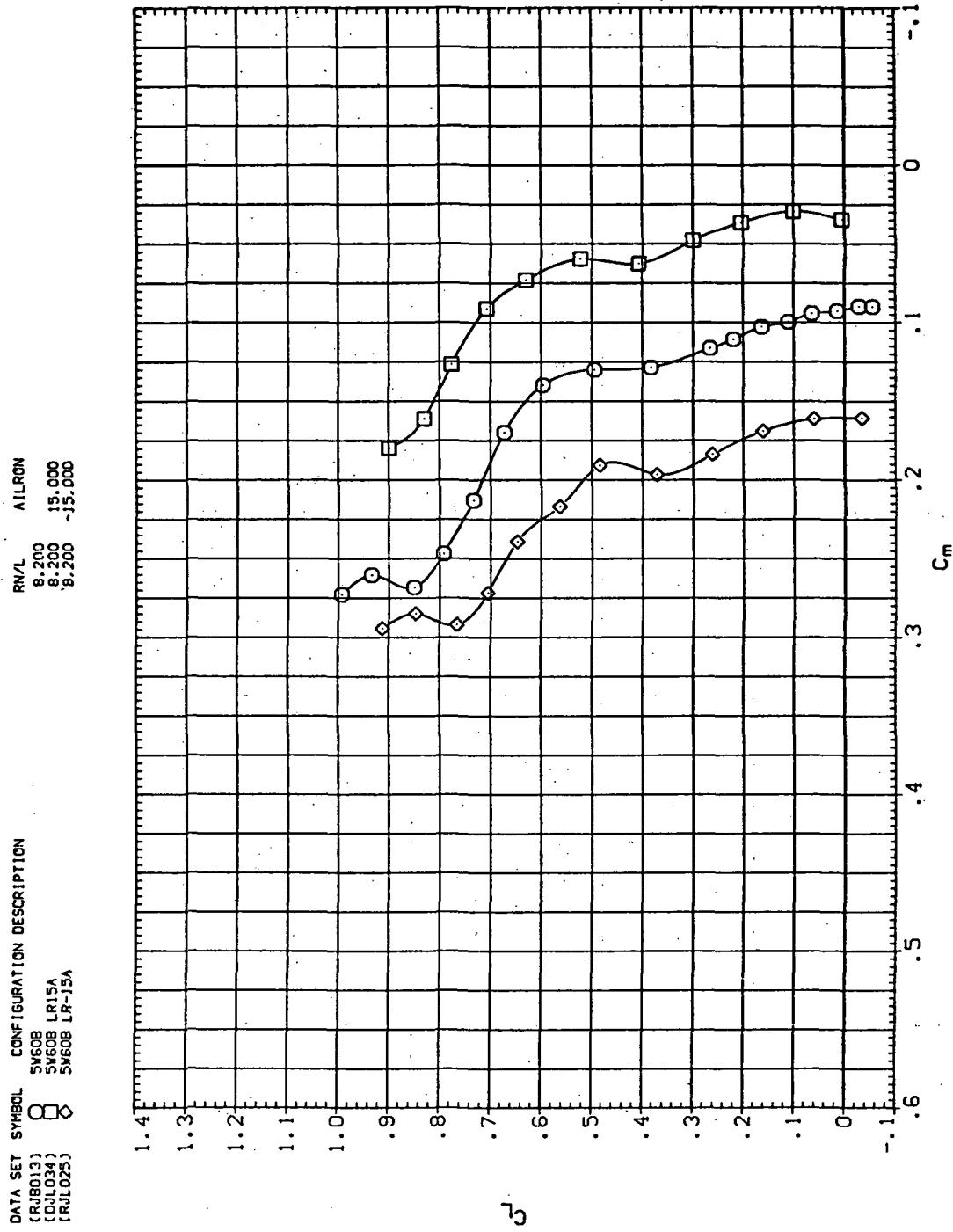
RN/L AIRRON

8.200	8.200
8.200	15,000
8.200	-15,000



(b)  $C_D$  vs  $C_L$

Figure 49.— Continued.



(c)  $C_L$  vs  $C_m$

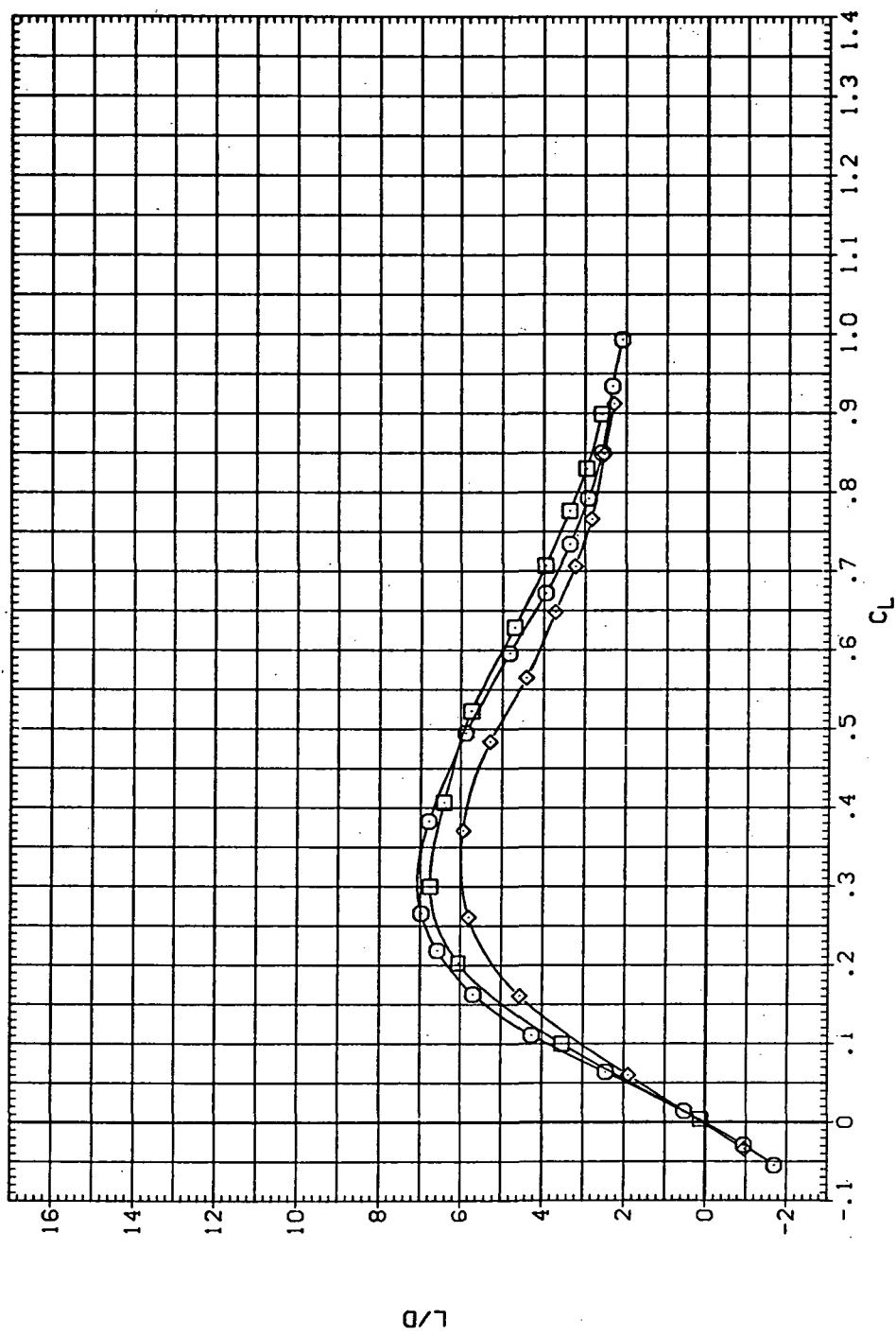
Figure 49.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RIB013)		SW608	LR15A
(DU034)		SW608	LR-15A
(RJL025)		SW608	LR-15A

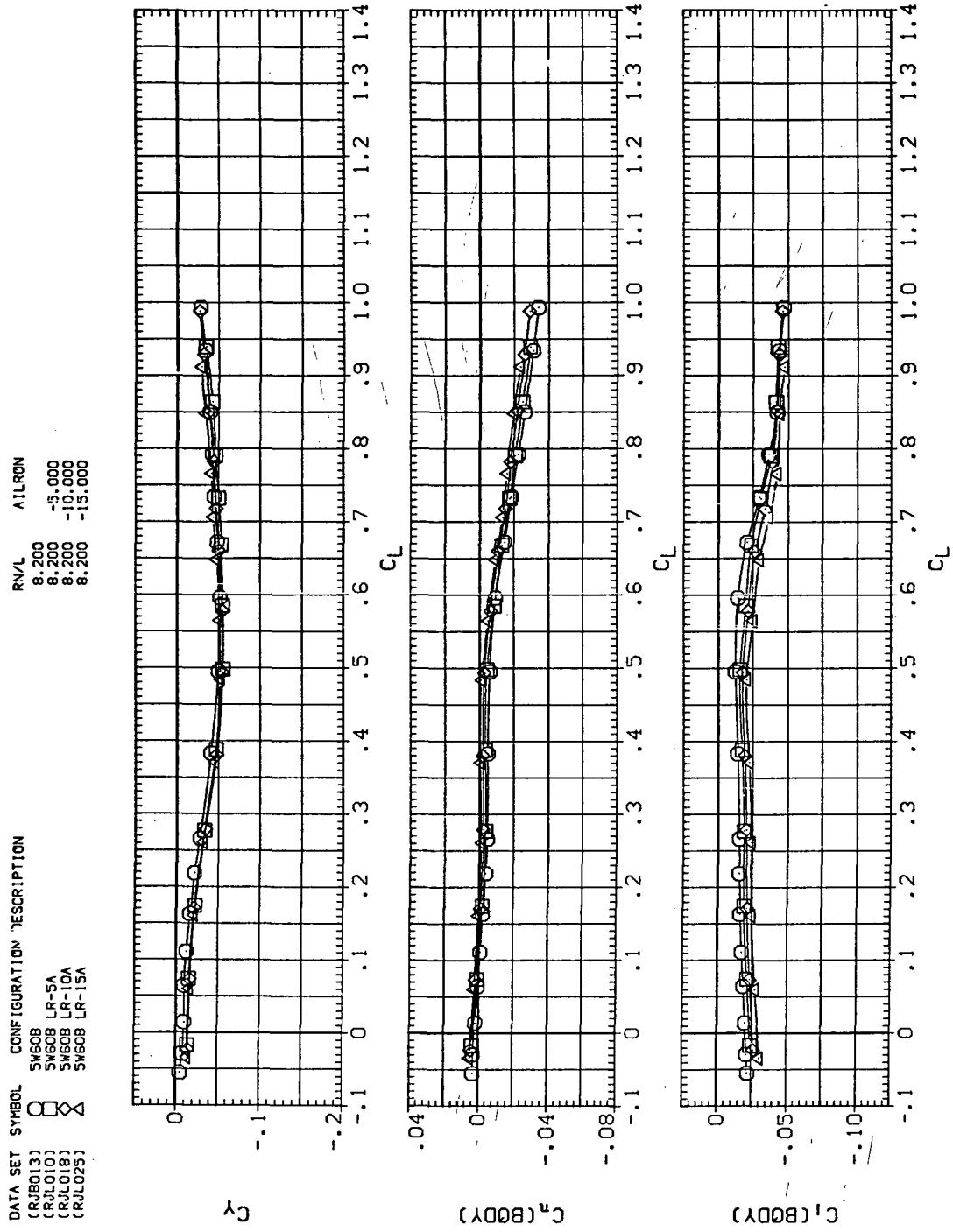
RN/L AILRON

8.200	15.000
8.200	-15.000
8.200	



(d)  $L/D$  vs  $C_L$

Figure 49.—Continued.



(e)  $C_d$ ,  $C_l$ , and  $C_n$  vs  $C_L$  (negative  $\Delta\delta_a$ 's).

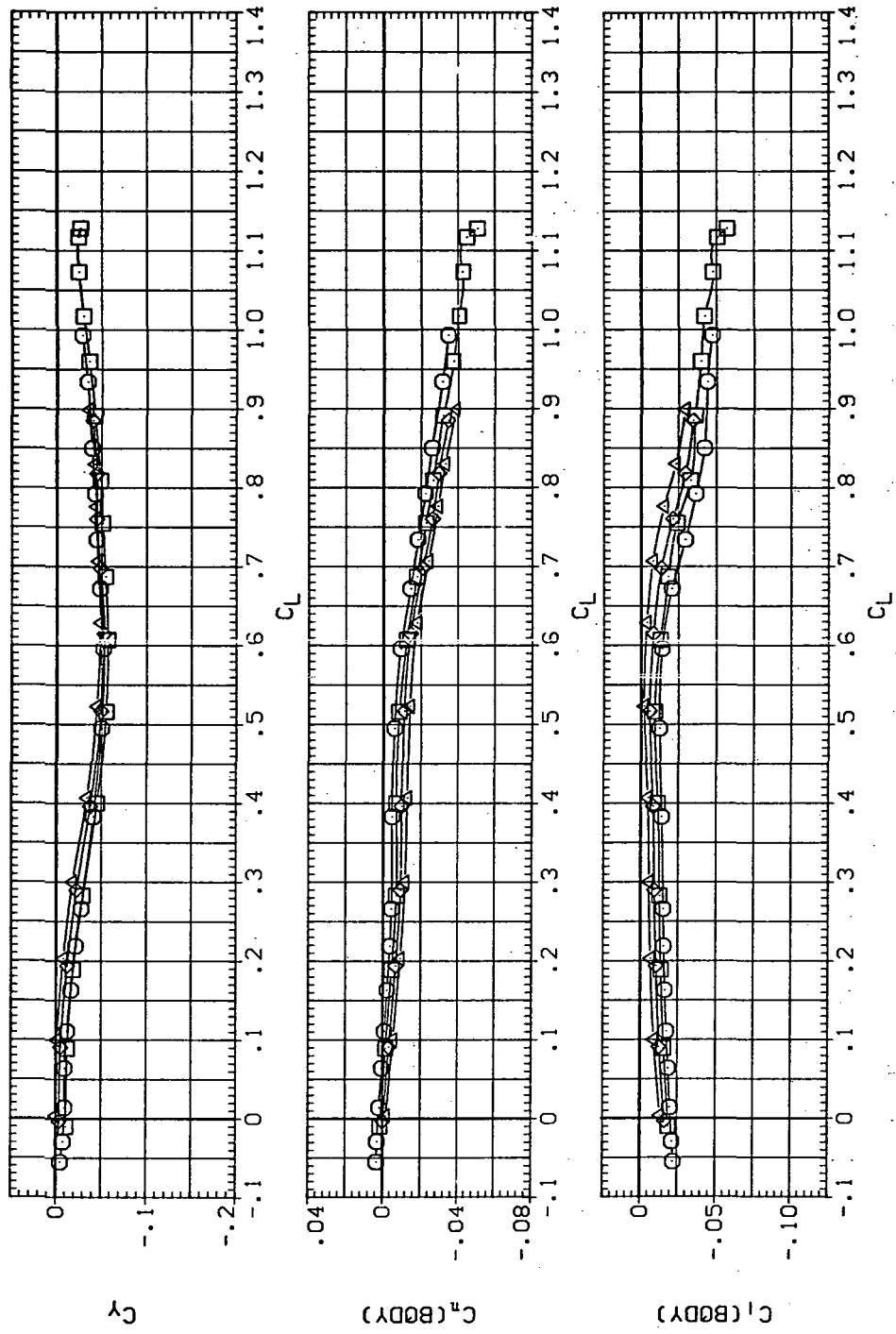
Figure 49.—Continued.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RLB013)	○	SWE0B
(RLD011)	□	SWE0B LR5A
(RLD024)	△	SWE0B LR10A
(DUL034)	◇	SWE0B LR15A

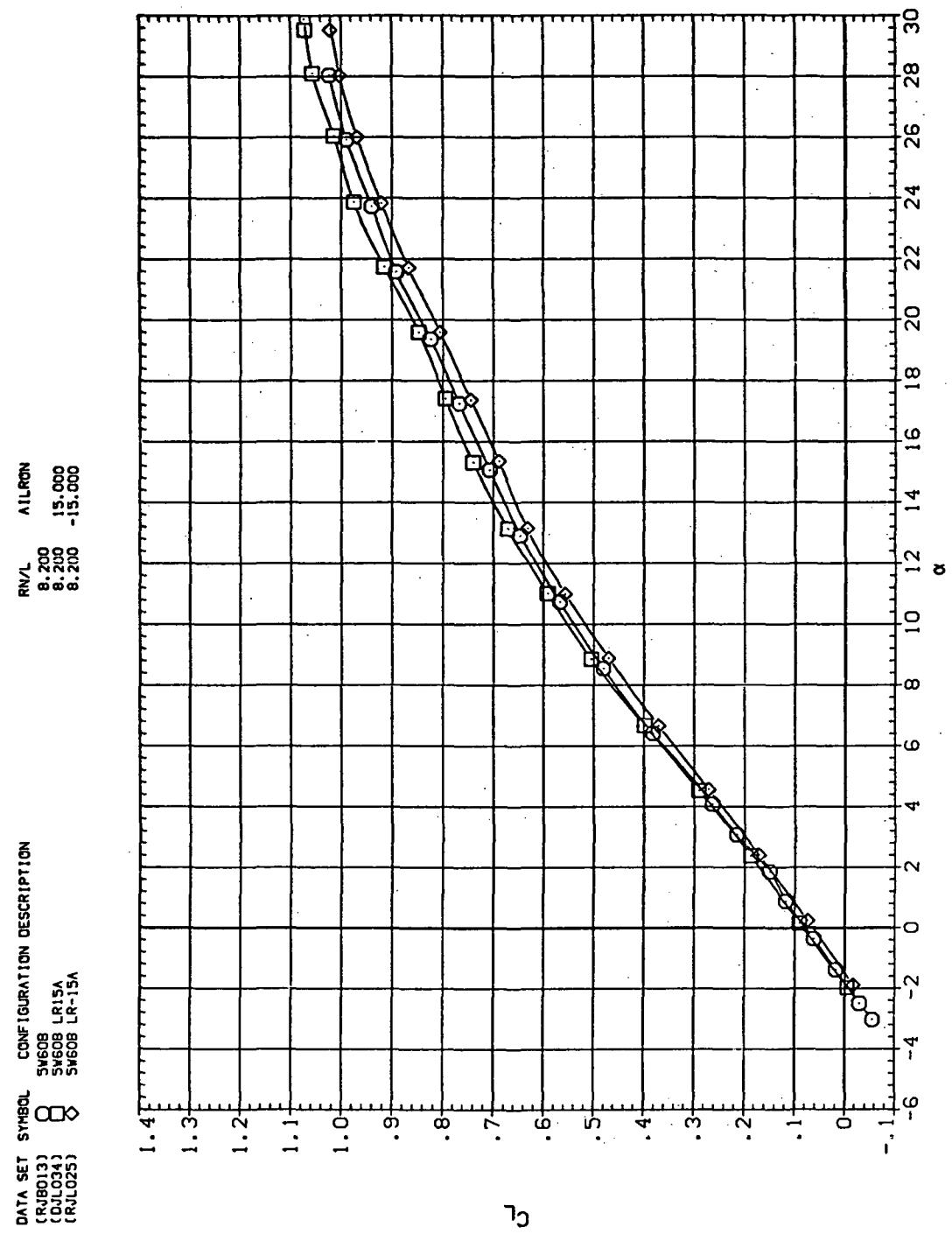
RN/L AILRON

8.200	5,000
8.200	10,000
8.200	15,000



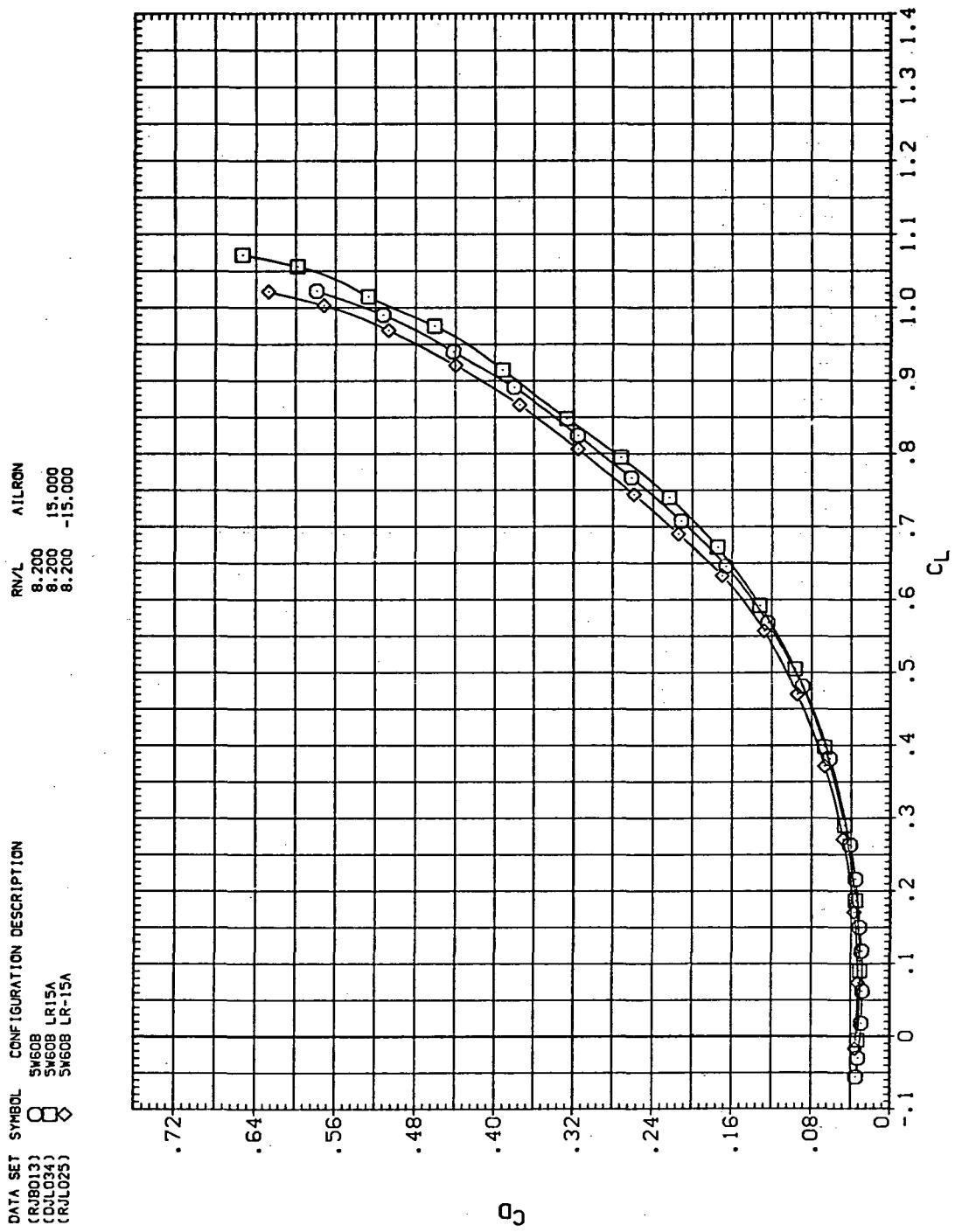
(f)  $C_Y$ ,  $C_n$ , and  $C_i$  vs.  $C_L$  (positive  $\Delta\delta_a$ 's).

Figure 49.— Concluded.



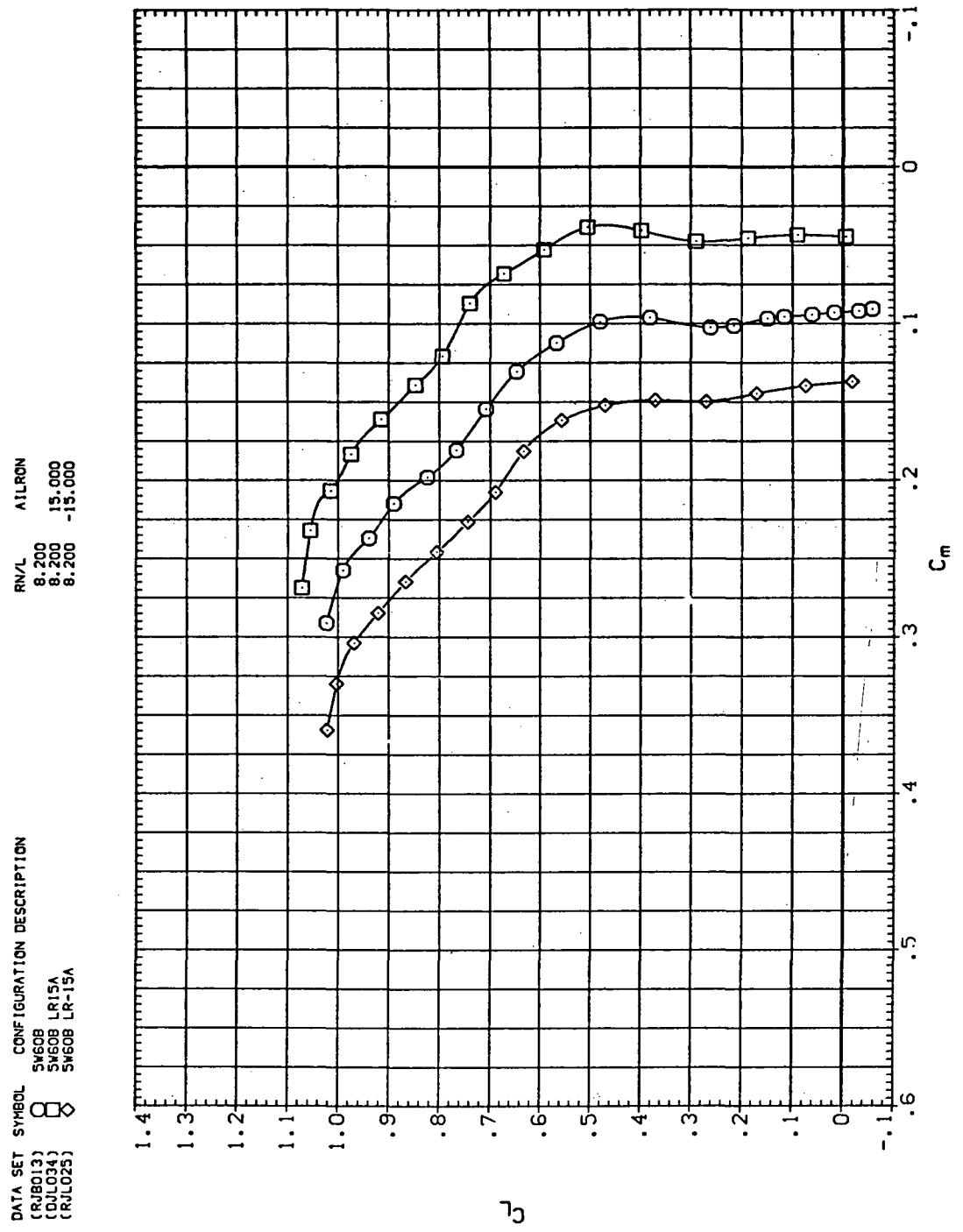
(a)  $C_L$  vs  $\alpha$

Figure 50.— Aileron effectiveness on the oblique wing with intermediate bend:  
 $\Lambda = 60^\circ, M = 1.40.$



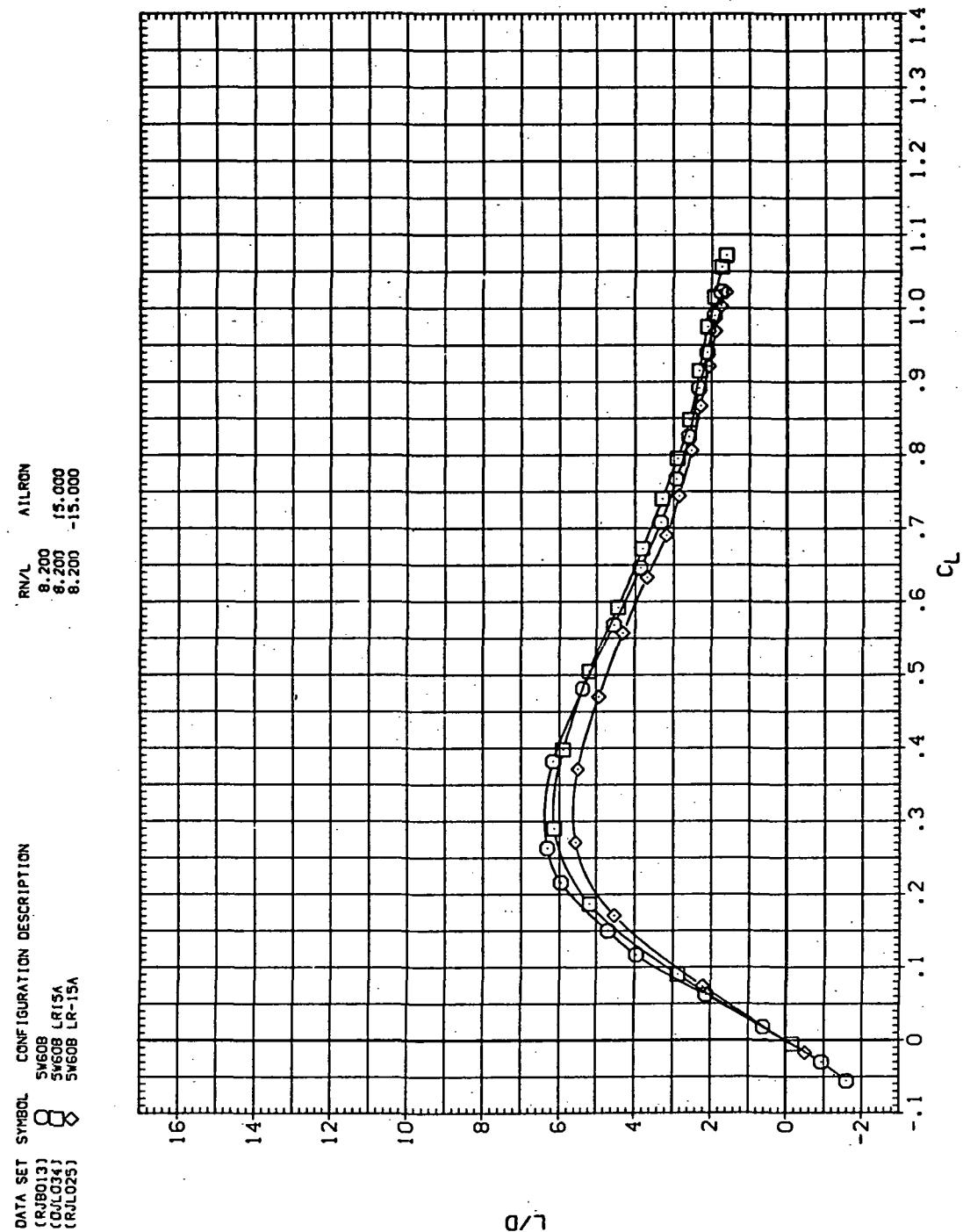
(b)  $C_D$  vs  $C_L$

Figure 50.— Continued.



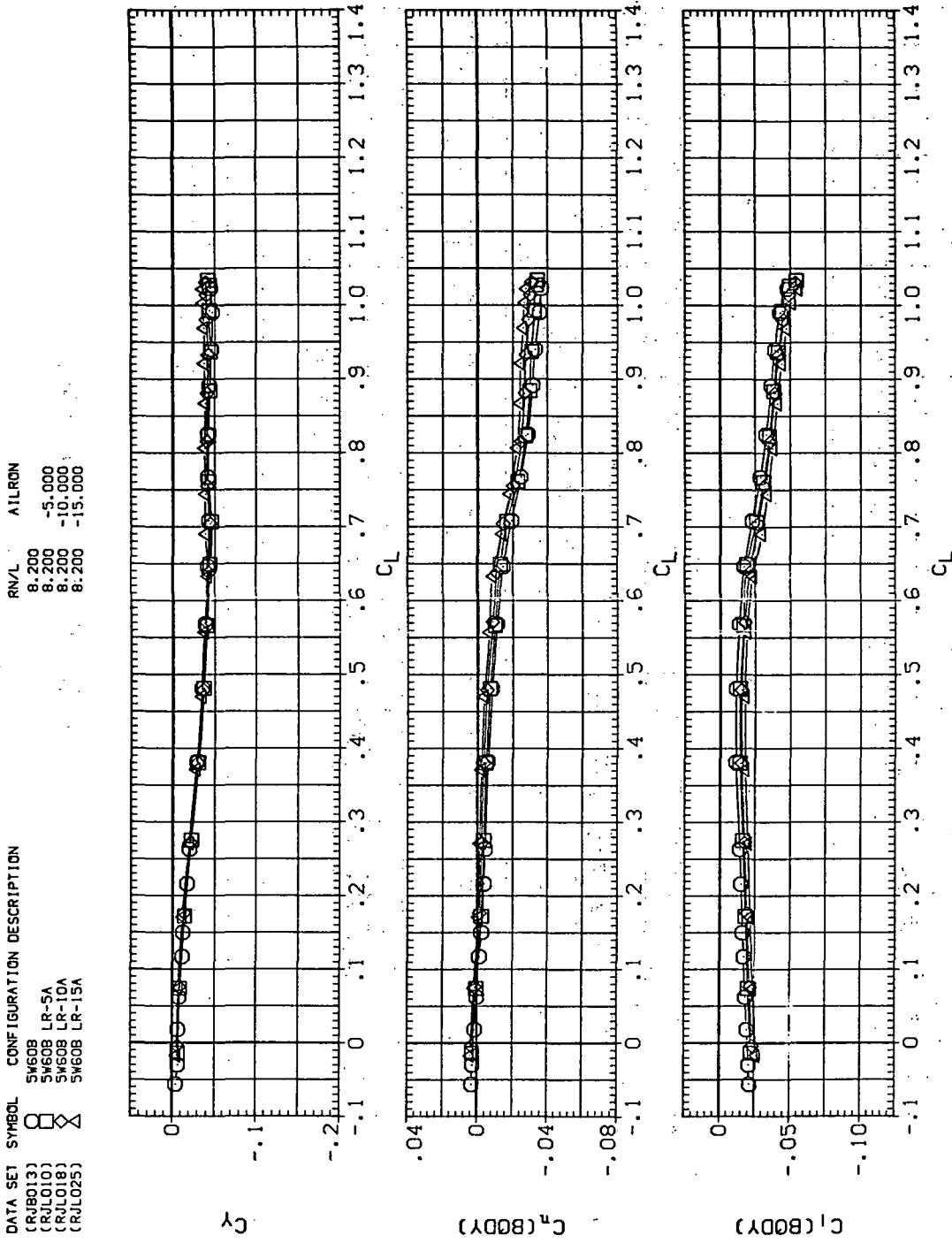
(c)  $C_L$  vs  $C_m$

Figure 50.—Continued.



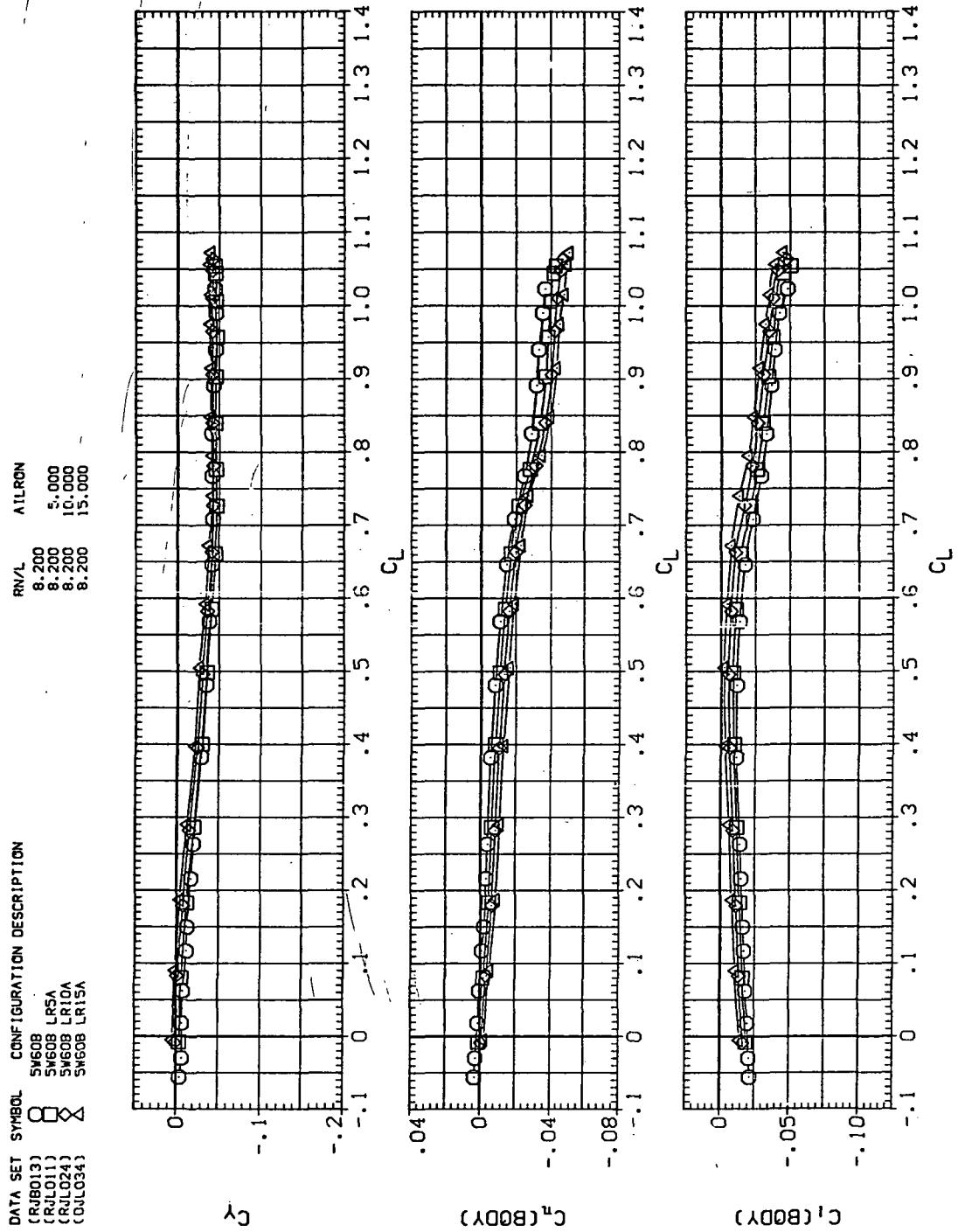
(d)  $L/D$  vs  $C_L$

Figure 50.—Continued.



(e)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (negative  $\Delta\delta_d$ 's).

Figure 50.—Continued.



(f)  $C_Y$ ,  $C_n$ , and  $C_l$  vs  $C_L$  (positive  $\Delta\delta_a$ 's).

Figure 50.— Concluded.

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